

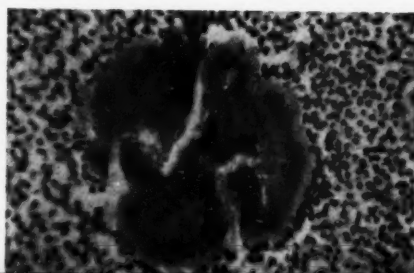
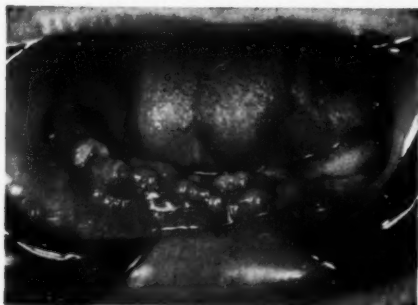
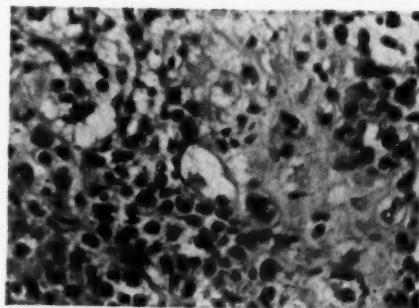
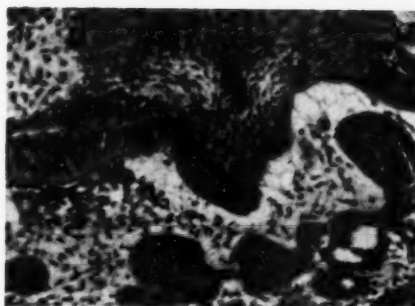
AMERICAN DENTAL ASSOCIATION

JULY 1961

a selection of world dental literature

dental abstracts

VOL. 6 NO. 7



dental abstracts



JULY 1961

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contents

- 386 *News and notes*
- 387 *Special article*
Oral cancer
Irving Meyer
- 391 *Dental education*
- 395 *Dental health*
- 403 *Dental practice*
- 419 *Dental research*
- 431 *General*
- 445 *Patents*
- 446 *Dissertations*
- 448 *Authors index*

news and notes

With this issue, DENTAL ABSTRACTS introduces a number of innovations in its format and content. The changes are the result of consultations with readers, with staff members of the American Dental Association, with dental educators, dental researchers and others. The changes are designed to make the publication more serviceable as well as more attractive.

Henceforth, the front cover will carry illustrations relating to one of the abstracts. Color will be used, both on the cover and in the body of the book. The classification of abstracts has been simplified; all abstracts now will be found under five major headings, each with its own title page and subindex: dental practice, dental research, dental education, dental health, and general.

A new section on current dental patents has been added, the information being provided by the S. S. White Dental Manufacturing Company.

Titles of some articles have been rewritten to make them more informative, but the original title always will be retained in the reference material, which will appear at the end of the abstract. The reference data include the name of the author(s), his address, title of the periodical in which the original article appeared, volume number, pages, month and year of issue.

A group of editorial consultants is being formed, consisting of outstanding representatives of dentistry throughout the world. They will aid in the selection of material for abstracting, and will advise the editorial staff on the content and quality of the abstracts. Occasionally, this column will carry comments of consultants on abstracts appearing in the issue. An increasing percentage of the abstracts carried will present material of special help and interest to the general dental practitioner. Greater effort is being made to eliminate from each abstract all but the most essential material.

With these changes, the original purpose of DENTAL ABSTRACTS remains the same—to present each month abstracts of the best work in dentistry being published in all countries of the world.

The articles from which abstracts are made are on file in the Library of the American Dental Association, 222 East Superior Street, Chicago 11, Illinois, and may be borrowed without charge by subscribers.

Readers are warmly invited to send in comments and suggestions for further improvements in DENTAL ABSTRACTS. The subscription price remains unchanged—\$8 a year in the United States, \$9 outside the United States. Please tell your colleagues about DENTAL ABSTRACTS.

The four-color illustrations on the front cover of this issue of DENTAL ABSTRACTS originally appeared in an article entitled "Oral malignancies . . . the dentist's responsibility," by Hamilton B. G. Robinson, in Volume 21, p. 1-7, of *Dental Radiography and Photography*. A. Porter S. Sweet, editor of that publication, kindly has made available to DENTAL ABSTRACTS the plates for the illustrations.

MANAGEMENT OF

oral cancer

REQUIRES

A TEAM APPROACH

The current treatment for oral cancer is based on the use of interrelated skills. When the diagnosis of carcinoma of the oral cavity has been established, the dentist calls on the surgeon, the pathologist, the radiologist, the internist, the anesthesiologist and other specialists. The field of cancer therapy has evolved to a team approach. Methods of treatment available include surgery, radiation, surgical treatment combined with radiation, hormones and chemotherapy.

Carcinoma of the lower lip is the most common of all oral cancers. It may be treated either by radiation or surgery. Radiation therapy by external cone technic produces excellent results. The tissue doses range from 6,000 to 7,000 r, and are administered in fractionated doses. Surgical treatment of carcinoma of the lower lip may vary from a wedge excision to the Estlander procedure consisting of bringing a flap from the upper lip to fill the surgical defect in the lower lip, and finally to the Daland operation where the entire lower lip is excised and closure is effected by sliding flaps from both cheeks together in to the midline. Both the Estlander and Daland procedures frequently require subsequent cosmetic surgery.

Carcinoma of the upper lip is treated in essentially the same manner as is a lesion of the lower lip, but in such a case, the prognosis will not be as good.

Commissure lesions may be widely excised and closed, using a plastic technic (Fig. 1); this fre-

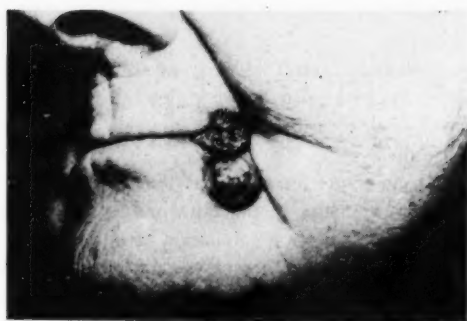


Figure 1 Above: Carcinoma of commissure which extends to both skin and buccal mucosa. Center; Same patient after surgical removal of lesion at the commissure and the extension to skin and buccal mucosa. Radiation therapy was given through an external portal. Raised area is a typical radiation reaction. Below: Six months after completion of surgery and radiation treatment

quently is followed by intraoral cone roentgenotherapy.

Metastatic lymph nodes from either upper or lower lip, which usually are ipsilateral, are treated by radical neck dissection of the side that is involved.

Carcinoma of the tongue is difficult to manage because of its relatively unfavorable prognosis. Many clinics use a combination of intraoral and extraoral roentgenotherapy to control a primary carcinoma of the tongue. Others have obtained good results by implantation of low intensity radium needles. A newer method consists of sewing cobalt pellets within a nylon thread directly into the tumor and its surrounding tissues. Surgical treatment may range from a small local excision to a hemiglossectomy done in continuity as part of a radical neck dissection.

Another difficult lesion to treat is cancer of the floor of the mouth. Radiation therapy is the treatment of choice. If cervical lymph nodes are palpable and if there is hope of salvage, a neck dissection must be done.

Carcinoma of the buccal mucosa may be treated either by surgery or radiation.

For carcinoma of the hard palate, surgical extirpation is the treatment of choice. A frequent result is a permanent nasooral or oroantral fistula, which may be covered later with a dental prosthesis (Fig. 2).

Cancer of the soft palate often is closely associated with the tonsil; hence, it is necessary to include a tonsillar extension of the tumor in the consideration of therapy (Fig. 3). Radiotherapy, through a combination of extraoral and intraoral portals, is the most effective treatment for the primary lesion. A radical neck dissection for cervical adenopathy frequently is done when the primary lesion has been controlled by radiation.

Surgical treatment of carcinoma of the maxilla and its gingiva is the method of choice, and usually includes the alveolar bone and floor of the maxillary sinus. Generally, a gingival carcinoma involves the bone and requires a resection of the mandible, usually accompanied by neck dissection. Radiotherapy may be used for very early noninvasive lesions.

Carcinoma of the salivary glands is treated surgically by wide radical excision. In the parotid gland the facial nerve usually is sacrificed during



Figure 2 Above: Carcinoma of anterior hard palate and alveolar ridge. Below: Maxillary denture with an obturator has been used to close surgical defect

radical resection of a malignant tumor. Radiation, when employed, is used either postoperatively or for palliation.

Carcinoma of the oral cavity which has progressed beyond the hope of salvage frequently is treated by radiation for palliation. The radiotherapy shrinks the total tumor bulk and permits the patient a more adequate nutrition.

In 12 patients with hopeless oral carcinoma, the mandible was removed and doses of radiation were given beyond the limits usually employed. Nine of the 12 patients received palliation ranging from fair to excellent, and the treatment prolonged considerably the life span of three of the patients.

Alcohol nerve blocks frequently are used for alleviation of pain when all other methods of pain control, such as narcotics, have failed.

On the front cover are depicted various types of oral cancer that the dentist may encounter, and related histologic slides. The illustrations were kindly provided by Hamilton B. G. Robinson, dean of the School of Dentistry, University of Kansas City (see editor's note on page 386). Above, left, is an ameloblastoma present in the mandible of a 60 year old woman for at least 15 years. Above, right, is tissue from a solid ameloblastoma. The smaller strands resemble the dental lamellae, and the larger follicle shows tall, ameloblastlike cells, stratum intermediumlike cells, and stellate cells arranged to mimic the enamel organ. Center, left, is an intraoral tumor which had metastasized from an osteogenic sarcoma of the leg of a 12 year old boy. This intraoral tumor was firm and movable, but was neither painful nor tender. Center, right, is tissue from the tumor shown at the left, showing disorderly growth, variation in cell size and form, and an area of cartilagelike growth. Below, left, is granulation tissue at the edges of an extraction wound. Any such material should be examined on removal by an oral pathologist. A biopsy examination of such tissue showed actinomycosis. Below, right, are *Actinomyces israeli* discovered in a section from a region such as that shown at left.

Meyer, Irving. 40 Maple Street, Springfield, Mass. Current therapy of oral cancer. J.Oral Surg.,Anesth. & Hosp.D.Serv. 18:194-202 May 1960

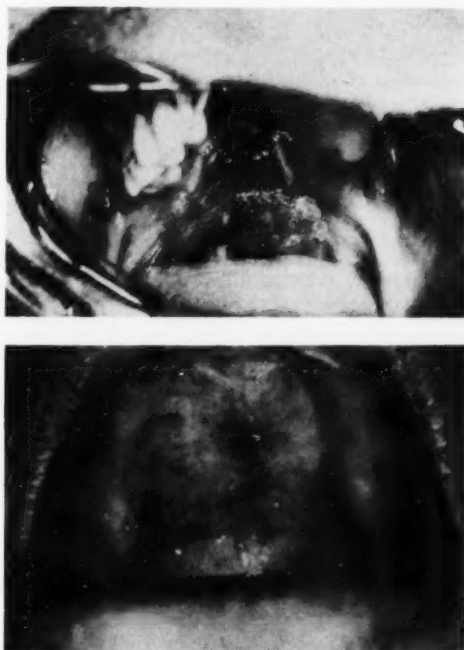


Figure 3 Above: Carcinoma of soft palate which extends onto mucosa of hard palate. Below: Post-radiation of lesion

Intradental granuloma

A 35 year old woman complained of sporadically occurring attacks of pain originating in the region of the upper left lateral incisor. Clinically, the tooth showed no signs of pathologic changes except for a slight discoloration around a previously inserted silicate filling. The reaction to an electrical vitality test was positive. Roentgenographic examination revealed the presence of a small mass of granulation tissue in the pulp chamber, verifying the clinical diagnosis of an intradental granuloma.

Depending on the exact localization of an intradental granuloma (whether coronal or radicular), on the phase of tumor development and on the conditions of the pulp and root canal, various treatment methods have been recommended. If the position of the granuloma is favorable, and the tumor development not too far advanced, endodontic treatment may permit preservation of the tooth. In the case reported, however, any attempt to save the tooth was contraindicated because the intradental resorption already had progressed to a stage in which tooth fracture or formation of chronic periapical abscesses could occur.

Böhne, Ch. München-Gräfelfing, Germany. Intradental granuloma. *Zahnärztl. Praxis* 11:221 Oct. 1, 1960

The diagnosis of intraoral tumors

There are few anatomic regions more amenable to the early diagnosis of cancer than the oral cavity, for direct access to this region is possible.

A careful history is the first essential. Pain or irritation in the oral region frequently is the symptom which brings the patient to the dentist. This pain may be increased on swallowing or phonation. Occasionally, a carcinoma of the maxilla may produce pain in the upper jaw for which dental extraction is undertaken; persistence of such pain after the removal of possible dental causes should arouse a suspicion of a tumor in the antrum. The history also may reveal the onset of oral bleeding, which in earlier stages of the disease may be scant in amount. Loss of weight usually is a late symptom and results from the

decreased food intake due to painful swallowing. A history of chronic alcoholism and heavy smoking frequently is elicited. Perhaps the strongest item suggesting the existence of oral cancer is the history of a previous oral carcinoma, for these tumors may be multicentric.

After taking the history, a careful examination is performed. Any change in the oral mucous membranes should be noted, measured and described in the patient's record.

The inspection starts at the lips, and both external and internal surfaces are studied. Ulcerations, fissures, atrophy, leukoplakia or tumor formation are noted. The lips are palpated between two fingers for any evidence of induration or tenderness. The buccal mucosa then is inspected and the full thickness of the cheek is palpated between thumb and forefinger placed intraorally and externally. The gingival buccal sulcus and the palate are inspected and palpated.

The patient then is requested to protrude the tongue. Malignancy may restrict the tongue's motility or cause deviation of the tongue to one side. The patient then is instructed to place the tip of the tongue on the palate. This allows visualization of the under surface of the tongue and the floor of the mouth. Perhaps the areas most overlooked in oral examination are the lateral aspects of the tongue posteriorly, and the base of the tongue. For these areas to be studied, the tongue should be retracted with a tongue blade. The floor of the mouth and the lateral margins of the tongue should be palpated.

The base of the tongue is inspected with a mirror and palpated. Indirect examination of the vallecula and the larynx with the mirror may be done by drawing the patient's tongue forward. The pharynx and larynx then are examined. A complete examination, especially in the presence of a suspicious oral lesion, includes palpation of the neck for cervical metastatic lymph nodes.

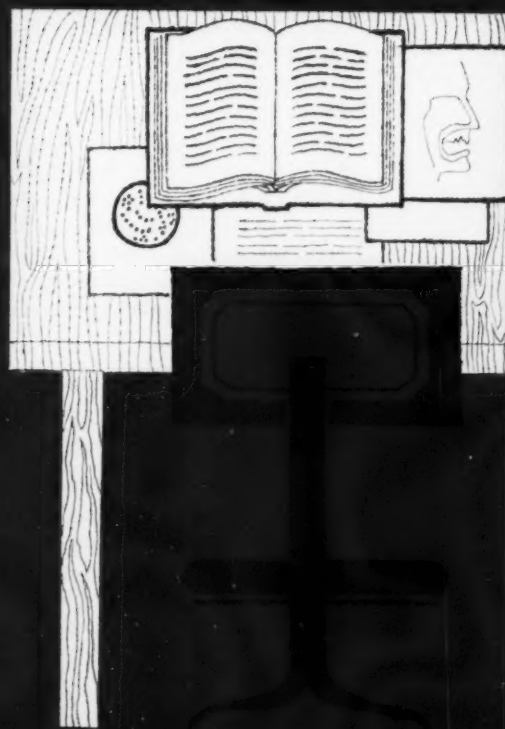
Unending suspicion for all undiagnosed oral lesions, prompt biopsy, and definitive resection of malignancies by those versed in surgery of the head and neck will result in an ever increasing survival rate for intraoral carcinoma.

Potter, John F. Tumor Clinic, Georgetown University Medical Center, Washington, D.C. The diagnosis of intraoral tumors. *J. Dist. Columbia D. Soc.* 35:10-11 Oct. 1960

dental education

Undergraduate

- New England regional plan. Kroepsch.392
Education reform in France. Hermann.392
More women dental students. Talbot.393



Undergraduate

A report of the New England regional medical-dental education plan

In 1957 a New England regional medical-dental education plan was adopted to encourage the medical and dental schools of the region to provide additional places for qualified New England students. The plan provides that each New England medical school receive \$2,500 a year for each student enrolled from each state in excess of the number enrolled from the state in 1956; New England's two dental schools benefit similarly but receive \$1,500 for each additional student.

The plan has not increased opportunities for New England students in New England medical schools to the extent anticipated. The total number of New England students enrolled in the six New England medical schools has steadily decreased; in 1959 there were 117 fewer New England medical students than in 1956—a drop of 12.3 per cent, from 953 to 836. During the same period the number of New England dental students in New England dental schools increased by 2.1 per cent, from 333 to 340.

The low input of New England residents in the national pool, when considered together with the region's favorable physician-population and dentist-population ratios, demonstrates that New England is depending on other states and other countries to provide its physicians and dentists.

The New England Board of Higher Education has proposed that the present regional medical-dental education plan be modified in the following specific details:

1. That Massachusetts and Connecticut extend their programs of publicly supported higher education by establishing medical and dental schools.
2. That each New England state without a publicly supported medical and dental school attempt to meet a part of its responsibility by entering into contractual arrangements with those schools which are willing to guarantee places for qualified residents of the contracting states.
3. That each New England state without a publicly supported medical and dental school

establish programs of financial aid which will enable qualified residents with limited financial resources to attend approved medical and dental schools.

Kroepsch, Robert H. 31 Church Street, Winchester, Mass. A report of the New England regional medical-dental education plan. *Massachusetts D.Soc.J.* 9:4:9-12 Oct. 1960

Reform of dental education in France

As in the other European countries, the key problem of dental education in France is the low number of students seeking admittance to dental schools. True to their tradition, the French universities remain open to all students desiring to become dentists (*chirurgiens-dentistes*), provided they possess the necessary qualifications. The idea of *numerus clausus*, that is, exclusion of prospective students because of their race or religion, is nonexistent.

Since World War II, the French Ministry of Education has promoted a policy of gradual decentralization. This process undoubtedly will require a period of trial and error before it can be accepted. The recruitment of dental students and educators will be united under a governmental agency concerned with the teaching and advancement of dental knowledge and research. The system of competitive examinations will not only be preserved but will be strengthened by the introduction of national examinations which must be passed before the student graduates. This measure, however, is not in accord with the idea of gradual decentralization. Steps will be taken to enable dental students to dispense with textbooks at a much earlier stage, so that they can apply themselves sooner and more effectively to clinical procedures.

After a transitional period, the faculty members of all dental schools in France will be obliged to devote full time to the triple task of caring for the patients at the school's dental clinic, teaching students and carrying out research projects. Only the *professeurs de clinique* (department heads) and their *maîtres de conférences* (assistants) will have the right, within strictly defined limits, to treat patients at private dental offices. Until 1959, every dental educator was free to exercise his profession. This proposed change is opposed by the

French dental profession and constitutes the most severe criticism of the new school reform. The majority of the younger generation of French dentists, however, favors this change. It seems safe to predict that, within a few decades, the full-time teaching system will be firmly established. What will then happen to private dental practice in France is, of course, another question. It may be argued that the school reform represents an initial step toward depersonalization in dentistry which threatens to ultimately change the dental practitioner to a glorified civil servant.

The reform in the dental curriculum is based on the principle of an instruction in three phases. The first, a two year period, will be devoted to the basic sciences and to preclinical training. The total period of dental studies will be reduced from five to four years. The second phase will provide the earliest possible contact between students and patients, clinical and laboratory training and all the modern means of diagnosis and therapy. As in the past, the third phase will include preparations for dental practice, for the final examination and for the doctoral dissertation which remains the culminating point of dental education and will entitle the graduate student to the degree Doctor of Dental Surgery (DR.CHIR. DENT.)

Postgraduate studies, with a view to specialization, will be available at all dental schools. The successful completion of postgraduate courses will lead to the award of a diploma, the conditions of which will vary according to the specifications of the specialty concerned.

Dental research projects, however, still are in the planning stage, and their exact form is not yet clearly defined. There exists a governmental program to introduce special certificates for dental researchers similar to those issued to researchers in other scientific fields.

The French dental profession hopes that the reform in dental education will not disappoint the hopes of the coming generation of dentists, and will provide them with the means to continue the efforts of their predecessors, changing and modifying their work in accordance to the requirements of our rapidly changing world.

Hermann, Henri. Faculté de Medecine et Pharmacie, Lyons, France. Reform of dental education in France. CIBA Symp. 8:2-6 April-June 1960

Why not more women dental students?

Since 1920, the number of women dentists in the United States has declined from 1,829 to 1,254; the percentage, from slightly more than 3 to 1.2 per cent. In 1930 there were 54 women dental students, 0.66 per cent of the total undergraduate dental registration. By 1947-1948, the number and percentage had increased to 124 and 1.38 per cent. In the past 20 years, both numbers and percentages have declined. In 1958-1959, the number enrolled was 93—0.69 per cent of dental school enrollment.

Among physicians and surgeons, between 5 and 6 per cent are women, and the same percentage of medical students are women. In colleges of dentistry and engineering, women constitute less than 0.75 per cent of all students.

Of 352 native-educated women dentists replying to a questionnaire sent to all women dentists in the United States, only 5 per cent expressed the belief that women dental students suffer discrimination. Questionnaires returned by the deans of dental colleges indicate that few if any regard maleness as a qualification essential to a dental student. All deans report that their schools are favorable to the admission of women students. Seventeen dental schools have made and plan to continue special efforts to interest women in dentistry. A few deans imply some reservations; two deans suggest they are not interested in enlisting women students because of a fear that they will not remain in practice for any length of time.

Reports by the National Council on Manpower indicate that professional schools cannot be complacent about attracting well-qualified applicants. Just after the end of World War II, the ratio of applicants for admission to dental schools to the number of available places was almost 4:1; by 1958, the ratio had declined to 2:1. In medicine, the ratio today is less than 2:1. The scholastic average of those admitted to medical schools is lower than in the past, and the percentage of medical students failing because of poor scholarship has increased by 65 per cent.

Government, business, the Armed Forces, and the professions compete for recruits of quality. The great untapped source of "quality" is the women of the nation.

The dental schools having the highest average percentage of women among their registrants between 1938 and 1958 were those at Howard University, University of Illinois, Meharry Medical College, University of Michigan, New York University, University of Pittsburgh and Tufts University, with a range from 1.5 per cent in the University of Michigan to more than 3 per cent in Howard University. Currently, the percentage of women among dental students is highest in schools of the Middle East section of the United States and lowest in the Southwest. The University of Puerto Rico shows the Latin-American influence: 10 per cent of the dental students are women.

A number of dental schools have opened their doors to women only recently. Harvard University first admitted women in 1952; Georgetown University, in 1954; St. Louis University, in 1959.

Generally, women dental students have more preprofessional education than do men. Of 153 women who graduated from dental schools between 1940 and 1958, 45 per cent had the bachelor's degree before they entered professional college, compared with about 33 per cent of all dental students that were admitted during that period.

Almost 45 per cent of women dental students plan to continue their education beyond the professional degree; 28 per cent do not, and about 25 per cent are undecided. Almost half plan to engage in specialty practice, about 13 per cent are undecided, and about 40 per cent will practice general dentistry. Over half of the women dental students who will specialize have chosen pedodontics, and an additional 25 per cent have chosen orthodontics. (Three fourths of the women specialists responding to questionnaires practice pedodontics or orthodontics.)

Not quite one half of women dental students plan to practice solo. Somewhat over one third prefer to practice with one or more other dentists,

about one tenth will enter public health, and a few hope to teach or engage in research.

Over 90 per cent of women dental students expect to practice full-time, and 98 per cent indicate that marriage will not interfere with their practice.

Women dentists and women dental students were asked why they chose dentistry. About one fourth of both groups had a parent or other relative in dentistry, medicine or a related profession such as pharmacy or nursing. Before deciding to study dentistry, about 9 per cent of women dentists and about 25 per cent of women dental students had been dental hygienists or dental or laboratory assistants, or had worked in areas that brought them in contact with physicians or hospitals. Family dentists encouraged a few young women to become dentists. Friends, husbands and sweethearts who were practitioners influenced others.

Most women dental students believe that young women fail to enter dentistry because they think of it as a man's profession or because they are not aware of the opportunities it offers women. Most girls never consider dentistry as a possible career.

To interest more young women in dentistry and to overcome the opposition to women in the profession, women dentists and women dental students recommend educating the public to appreciate that (1) women can practice dentistry as well as men, and (2) women dentists are not freaks. Organized dentistry can do much to educate the public. Dental colleges should cooperate in providing information for college and high school counselors concerning the opportunities for women in dentistry and in bringing information directly to high school and college girls, particularly to those majoring in the sciences.

Talbot, Nell Snow. 2700 Broadway, Evanston, Ill. Why not more women dental students? *J.D.Educ.* 25:11-19 March 1961

Caries etiology and control

- Brushing with topical fluoride. Berggren . . . 396
Caries-free children. Bergström 396
Dentist's children. Ludwig 396
Sugar intake and caries. Lauterstein 397
Fluoride tablets. Ziemnowicz-Glowacka . . . 397
Partial recording of caries. Welander 398

Gerodontics

- Problems of aged persons. Rosenthal 399

Orthodontics

- Vertical overbite. Fleming 400
Effect of finger-sucking. de Rudder 400

Hospital dentistry

- V.A. hospitals. Casey 401

Extractions

- Reasons for removing teeth. Andrews 402

dental health



Caries etiology and control

Supervised toothbrushing with a sodium fluoride solution

The caries status of 568 children who, during a two-year period, had brushed their teeth nine times with a 1 per cent sodium fluoride solution, was compared with that of 1,116 untreated children. The supervised toothbrushing was performed over plastic pails at the schools. Each child received a parchment beaker containing about 30 ml. of the sodium fluoride solution, into which the toothbrush was dipped. Careful brushing then was performed for about four minutes.

Comparison between the treated group and the control group revealed a significant difference as regards the incidence of caries, to the advantage of the treated group. The caries-inhibiting effect was especially pronounced in teeth which had erupted during the application period. The difference in caries status was statistically significant as regards maxillary teeth. However, in mandibular teeth it was not as definite, and no difference at all was found in respect to some individual teeth.

Fairly great variations with respect to the caries status of tooth surfaces were noted. The cause of this may lie in the fact that brushing is more effective on some surfaces than on others. When the magnitude of the caries-inhibiting effect was calculated on the results of the sodium fluoride application on maxillary teeth, the mean reduction of caries was between 25 and 30 per cent.

In the upper jaws of the children in the fluoride group, recurrent caries was found on 22 surfaces, in the control group on 71 surfaces. In the lower jaw, 39 surfaces with recurrent caries were found in the fluoride group against 75 in the control group. Generally, the decay was found in first molars.

The middle and upper economic classes were represented to a greater degree in the experimental children than in the control children.

Considering the good results obtained with the brushing method of applying a topical fluoride solution, the authors assert that the various systems of topical application should be re-evaluated. A simplified, time-saving method that per-

mits treatment of the greatest number of children is to be preferred to a more inefficient method, even though the caries-inhibiting effect of the treatment is somewhat reduced.

Berggren, Helge, and Welander, Erik. Eastman Institute, Stockholm Va, Sweden. Supervised toothbrushing with a sodium fluoride solution in 5,000 Swedish school children. *Acta odont.scandinav.* 18:209-234 Nov. 1960 [in English]

A clinical study of caries-free five year old children

Twenty-eight caries-free children between five and six years old were compared to 31 control children of the same age, chosen at random among patients at the Dental School in Stockholm. Factors compared were health of the subjects; food consumed at and between meals; oral hygiene; economic background, and the following saliva qualities: secretion rate, pH value and buffering action in resting saliva and saliva stimulated by paraffin chewing, and amounts of calcium plus magnesium and inorganic phosphorus in stimulated saliva.

The caries-free children seem to have been favored by a number of factors which seem to involve increased resistance to caries. These children were healthier than children in the control group; ate more at meals (including more milk); ate less candy and pastilles between meals; practiced better oral hygiene (especially regarding mouth rinses after meals), and their salivas had a stronger buffering action.

No group difference in economic background was apparent.

Bergström, K.; Ericsson, Y., and Lysell, L. Royal School of Dentistry, Stockholm 3, Sweden. A clinical study of caries-free five year old children. *Svensk tandlak.Tskr.* 53:599-610 Aug. 1960

Caries prevalence amongst dentists' children

The Council on Dental Health Education of the New Zealand Dental Association sponsored a study to determine the prevalence of dental caries among dentists' children. From questionnaires sent to 729 dentists, records were obtained for

333 children of dentists and for 145 control children.

Dentists' children have much less caries than the children of nondentists. The difference is of the order of 85 per cent at the age of 3 to 5 years, falling to about 33 per cent at the age of 15 to 17 years. In each instance the differences are statistically significant.

The mean number of DMF teeth per child, for the children of dentists and of nondentists, were as follows at the indicated age groups: 6 to 8 years old, 1.54 and 2.93 DMF teeth per child; 9 to 11 years, 3.29 and 6.14; 12 to 14 years, 6.80 and 12.46, and 15 to 17 years, 11.21 and 16.61 DMF teeth per child.

In view of the specialized training of dentists, it could be expected that their interest in dental health matters in caring for their own children would be highly developed. If such was not the case, little could be expected from other sections of the community.

Ludwig, T. G.; Denby, G. C., and Struthers, W. H. Training School for Dental Nurses, Upper Willis Street, Wellington C.2, New Zealand. Caries prevalence amongst dentists' children. *New Zealand D.J.* 56:174-177 Oct. 1960

Sugar intake and caries in children

Ninety white children 4 to 14 years old, their parents and siblings were studied to investigate the relation between sugar ingestion of the child during infancy and at present; and of the mother during pregnancy and at present. The findings were:

1. Children with a low incidence of caries had siblings with little or no caries. Children with a high incidence of caries generally had siblings with a high incidence of caries. A relationship to the caries experience of the parents could not be established.

2. No significant relationship could be established between caries experience in the 90 children and sugar ingestion of the child during infancy or at present. No relationship could be established with the mother's sugar ingestion during pregnancy or at present.

3. No relationship could be established between dental caries experience and the adherent

and detergent character of the diet, toothbrushing habits or salivary volume.

4. A positive relationship between clean teeth and low caries experience was observed. Unclean teeth had a high caries attack rate.

5. There was a slight relation between caries experience and salivary viscosity. There was a slight tendency for the children with more viscous saliva to have a higher index of caries than the children with thin saliva.

6. These findings do not negate the well-established relationship between sugar ingestion and caries, or between caries and adherent foods and toothbrushing habits. The findings suggest that these relationships are difficult to demonstrate clinically and that the causes of caries are multiple and not solely a function of sugar ingestion.

Lauterstein, Aubrey M., and Massler, Maury. College of Dentistry, University of Illinois, Chicago, Ill. Sugar intake and caries in children. *D.Progress* 1:100-107 Jan. 1961

Effect of sodium fluoride tablets on teeth of children in Poland

In autumn 1956, the Dental School of the Medical Academy of Łódź, Poland, initiated a program to reduce the incidence of caries in pupils of the municipal kindergartens by administering sodium fluoride (Fluodar) tablets. There were 8,122 children, from three to five years old, examined periodically, and the data were recorded on special individual charts. Two large groups were formed: (1) Group F, consisting of 4,434 children receiving the sodium fluoride tablets, and (2) Group C, consisting of 3,688 children serving as controls.

This survey is the first investigation of this type conducted in Poland. The method of comparison used was based on the DMF index.

After completion of the first investigation, made approximately one year after the start of the program, it was impossible to draw conclusions as to the caries-reducing effects of the sodium fluoride tablets.

After two years of observation, however, a definite difference in the incidence of caries between the two groups could be determined. Group F had from 7.1 to 38.5 per cent fewer new cavities than Group C.

After three years of observation, the difference between the groups increased to from 21.6 to 42.4 per cent.

At present, the tooth condition in Group F is superior to that in other Łódź children (including Group C). The most recent dental examination of Group F was made in January 1960, and disclosed the following data:

1. A certain amount of malocclusion is (and has been) obvious in some of the children but sometimes the condition corrects itself without orthodontic treatment.

2. The condition of the gingival tissues can be classified as being between good and fair; no child in the group shows signs of gross periodontal disease.

3. The teeth are comparatively free from carious lesions, and are affected about one tenth as much as those of similar children groups in the community at large. The average DMF index figure is 1.2 in children now from six to eight years old, whereas the figure is 9.95 in Group C.

The results of the caries-reducing program indicate the beneficial effects of sodium fluoride (Fluodar) tablets.

Ziemnowicz-Głowacka, Wanda. Pietikowska 315, Łódź, Poland. Sodium fluoride tablets as a means to reduce the incidence of caries in kindergarten pupils. *Czas.stomat.* 13:719-728 Oct.-Nov. 1960

Partial recording of dental caries

In extensive investigations of dental caries, the possibility has been considered of recording, for each subject, only one tooth, one group of teeth, or certain surfaces of teeth to represent the whole dentition. This procedure is termed partial recording, as distinct from total recording which includes the entire dentition. Partial recording offers certain advantages: (1) recording is more quickly completed, (2) recording may be more accurate because it should be easier to record correctly few teeth than many teeth, (3) fewer examiners are required for a study, and (4) recording procedure is less time-consuming to both the examiner and the subject.

Study of the findings in former investigations indicates that the agreement between the left and right halves of the dentition as to the number of intact teeth is extraordinarily close. If only the right half of the dentition were recorded, the rate of observed intact teeth then being doubled, a fair estimate would seem to result of the total number of teeth that were intact in the whole dentition.

The idea of recording but half the dentition by utilizing the symmetric development of caries was expressed by Westin and Wold in 1943. The idea seems to be practicable.

The procedures of partial recording can be classed according to the following claims:

1. The carious involvement observed at partial recording after multiplication shall for each subject supply a fair estimate of the carious involvement within the entire dentition.

2. Partial recording shall provide a ranking scale in respect to carious involvement, and this ranking scale shall tally well with that which would have obtained at total recording.

3. The caries rate emerging from partial recording shall convey a fair estimate of the mean of intact teeth in the entire dentition for a group of subjects.

For each of the afore-mentioned claims there is a method of partial recording.

There are several disadvantages to partial recording. For example, if it is intended to study the influence of a given factor on the number of intact teeth, the circumstance that the recording is partial must result in the grouping of the subjects becoming coarser. The scatter is greater at partial than at total recording. Also, certain types of partial recording may give rise to a systematic error. Obviously, 0 intact teeth at partial recording cannot be translated directly into a fixed number of intact teeth at total recording; the translation is going to vary from material to material.

Welander, Erik. Royal School of Dentistry, Stockholm 3, Sweden. Partial recording of dental caries. *Acta odont.scandinav.* 18:377-406 Nov. 1960 [in English]

Gerodontology

Dental problems of aged persons

Twelve hundred clinic patients more than 60 years old received dental examinations at the Temple University School of Dentistry. Abrasion, erosion, attrition or fractures of the teeth were observed in 24 per cent of these patients, periodontal disease in 37 per cent, and caries in 38 per cent. The periodontal disease in only 43 per cent of the patients was treatable, whereas 50 per cent of the carious teeth could be restored. Eighty-seven per cent of the patients required some prosthetic restoration, and only 11 per cent could be treated by crowns and bridges.

A review of the medical histories revealed that 32 per cent of the 1,200 patients had cardio-

vascular disease. The incidences of other diseases were as follows: respiratory disturbance, 16 per cent; genitourinary disease, 21 per cent; benign tumors, 6 per cent; malignant tumors, 1 per cent; neurologic disturbance, 5 per cent; arthritis, 7 per cent, and symptoms of temporomandibular joint changes ranging from clicking to pain, 33 per cent. Systemic deterioration may be aggravated by oral pathosis, and the latter may be a result of systemic deterioration.

Poor appetite from inactivity, loss of taste because of the diminished number of active taste buds, and difficulty in mastication create a nutritional problem. Mastication may be impaired by flat teeth, missing teeth, sore mouth or inadequate dentures. The slower rate of repair, especially of connective tissue, is characteristic of aging and suggests the need for a high protein and supplementary vitamin diet after oral surgery. Vitamin C is indicated.

Angular cheilitis is a common result of loss of vertical dimension of the face and of ariboflavinosis. The tongue becomes smooth, the effect of poor absorption of vitamin B. The mucosa and gingiva are atrophic with diminished keratinization and reduced elasticity. These structures appear paler, with visibly enlarged superficial

Figure 1 Distended blood vessels in a 69 year old dental patient are clearly visible as a result of diminished keratinization. Attrition and fracture of the tooth crowns, and a crack in the enamel of the lower left lateral incisor may be observed

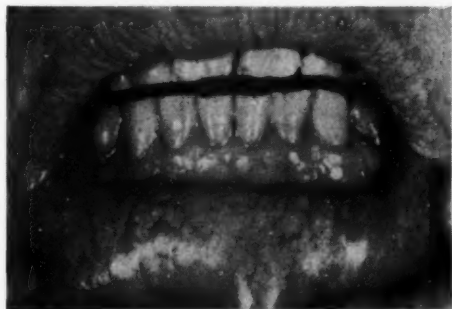


Figure 2 Roentgenogram of mandible of 73 year old subject shows changes in the bone



Figure 3 Pulp calcification in 70 year old patient



blood vessels (Fig. 1). Estrogenic deficiency causes thin, friable soft tissues. Gingival recession and blunted interdental papillae form spaces for food impaction.

Hypochlorhydria reduces utilization of calcium and phosphorus, with ensuing haliteresis of the cranial, facial and alveolar bone. Estrogenic deficiency results in osteoporosis. Roentgenograms (Fig. 2) disclose rarefaction with thin cortical plates and reduction of the trabeculae in thickness and in number. Loss of protein with consequent defects of the bone matrix results in brittle bones with danger of fracture. These senile changes reduce bony resistance to stress and may lead to rapid resorption of alveolar ridges. Since the poor resistance of bone to stress is accompanied by easy traumatization of the soft tissues, denture wearing may be a problem. The use of flat or inverted cusps and metal cutting edges to reduce lateral force helps to alleviate the difficulty.

The teeth of elderly people appear darker than in youth; the color has not changed but the lighter incisal edges have been worn away. There are frequent cracks in the enamel, flattened contact points and hypercementosis. The periodontal membrane is thinner and the pulp becomes calcified (Fig. 3). This change in pulp tissue, together with the higher threshold of pain in the older person, permits the dentist to carry out many restorative procedures without the use of anesthetics required for younger patients. Occlusal wear of the natural teeth broadens and flattens the occlusal table to the point of excessive frictional stress. The stress on the alveolar bone can be reduced and the efficiency of mastication improved by reducing the buccolingual diameter of the crown of the teeth and by cutting new sulci in the occlusal surfaces.

A reduced salivary flow often is an annoyance of advancing years. Frequent draughts of water to which lemon juice and glycerin have been added often afford temporary relief. Pilocarpine hydrochloride 5 mg. taken a half hour before meals may stimulate the salivary glands to renewed activity; however, this drug should be used with caution, as overdosing will result in profuse sweating or vomiting.

The aged person fatigues easily, and is likely to have cardiovascular pathosis. Dental appoint-

ments should be as short as practicable, and preferably in the morning.

Rosenthal, S. Leonard. 3223 North Broad Street, Philadelphia 40, Pa. Dental problems of age. *J.D.Med.* 15:179-182 Oct. 1960

Orthodontics

Vertical overbite during eruption of the permanent dentition

Serial record casts and lateral cephalometric films of subjects covered by the University of Michigan Elementary and High Schools Growth Study were studied in this investigation of the vertical overbite—"the overlapping of the upper incisors over the lowers in a vertical plane." The casts and films were of children 9 to 16 years old. The following conclusions were reached:

1. There is a definite cycle to the degree of the vertical overbite, which increases from 9 to 12 years of age and thereafter decreases, at least to age 17 years.
2. The overbite is related to a number of craniofacial dimensions, some of which are of importance in both boys and girls whereas others are of importance only in boys or only in girls.
3. There is some evidence to indicate that the reduction in overbite after 12 years of age may be due to growth of the ramus of the jaw.
4. There is no statistically significant difference in the degree of overbite in boys and girls, although the mean figures for girls tend to run slightly higher than those for boys.

Fleming, Harry B. School of Dentistry, Medical College of Virginia, Richmond, Va. An investigation of the vertical overbite during the eruption of the permanent dentition. *Angle Orthodont.* 31:53-62 Jan. 1961

Tooth eruption and finger-sucking

To determine the effects of finger-sucking on tooth eruption and occlusion, and thereby on the dental and general health of the developing child, a study was carried out at the Pediatric Clinic

of the University of Frankfurt/Main. In this study models of 164 deciduous and 172 permanent dentitions were used.

The results were as follows:

1. Finger-sucking can cause a specific kind of deformity in the upper dental arch, usually involving the anterior region. In certain instances, the defect seems to correct itself in the deciduous dentition. If, however, the habit persists for more than four years, the deformity appears to be maintained in the permanent dentition.

2. During the period of mixed dentition, there exists a strong tendency for the erupting permanent teeth to overcome the adverse effects of finger-sucking on the occlusion. For dental and general health, however, the four-year duration of this habit does not seem to be too critical. Evidence, suggesting finger-sucking as an etiologic factor of malocclusion, is inconclusive.

3. Management of the finger-sucking habit in developing children, if attempted by inexperienced dentists or physicians—may result in a "guilt complex" which in most of the young patients will produce complications far more serious than the effects of finger-sucking on tooth eruption and occlusion. Patients with diagnosed malocclusions caused by finger-sucking should be referred to an orthodontist who may obtain successful correction by using removable appliances which simultaneously discourage the child from persisting in this habit.

de Rudder, B. Ludwig Rehn Strasse 14, Frankfurt/Main 10, Germany. Tooth eruption and finger-sucking. *Deut.med.Wschr.* 85:1517-1520 Aug. 26, 1960

Hospital dentistry

Dental health service in Veterans Administration hospitals

The percentage of hospitals in the United States reporting a dental department has risen from 26 per cent in 1945 to 35.6 per cent in 1960. The dental program conducted by the Veterans Administration has been in operation since 1921. Dental health services are rendered for veteran

beneficiaries in conjunction with other elements of the department of medicine and surgery and in accordance with the over-all policies announced by the chief medical director. The objective of the dental program is to provide the highest standard of dental care possible within the framework provided by law. The 171 Veterans Administration hospitals range in size from 56 to 6,346 beds.

Each dental department is supervised by a chief of dental service who functions on the same administrative level as the chief of other professional services such as medicine, surgery and so forth.

Dental care is provided in each of four basic types of installations: the general medical and surgical hospital, the tuberculosis hospital, the neuropsychiatric hospital, and the domiciliary. In the first two types of hospitals listed, one dentist supported by two auxiliary persons is needed for every 150 patients. In the neuropsychiatric hospital and the domiciliary, one dentist supported by two auxiliary persons is needed for every 250 patients. Dental assistants, dental technicians, dental hygienists and clerk stenographers constitute the auxiliary personnel. The various types of auxiliary personnel required may vary according to the type of hospital.

In all V.A. hospitals, the dental staff is supplemented by consultant and attending dentists in the various dental specialties. The dental service usually is divided into oral diagnostic, periodontal, oral surgical, restorative, and prosthodontic sections supported by roentgenographic and laboratory departments.

One of the major functions of the dental service is to coordinate its activities with the admitting service, either by (1) determining the need for hospitalization of those patients seeking primary dental care, or (2) performing the oral phase of the routine physical examination given all patients. In V.A. hospitals during the fiscal year 1958, routine oral examination resulted in recognition of 274 early oral malignancies in patients whose admission diagnosis was unrelated to oral malignancy. Countless other oral lesions or abnormalities having direct or indirect relationship to the admission diagnosis also were discovered. Oral findings and dental treatment recommendations are noted on a hospital dental

record form, for review by the physician who has primary responsibility for the care of the patient. However, the dental service assumes major responsibility for the clinical management of patients seeking primary dental care, after physical examination and admission to the hospital. Pertinent laboratory requests, prescriptions and progress reports are made by the dentist in charge. Primary dental care is only a small percentage of the patient care rendered by V.A. hospital dental services; most of the dental care rendered by V.A. hospital dental services is supportive.

Casey, Gerard J. 222 East Superior Street, Chicago 11, Ill. Veterans affairs from the point of view of the American Dental Association. J.Kentucky D.A. 13:9-12 Jan. 1961

Extractions

Permanent tooth mortality

The reasons for removing 2,411 teeth from 805 patients of low socioeconomic status were investigated.

In all age groups combined, 38.3 per cent of the teeth were extracted because of caries, 36 per cent because of periodontal disease, 3.5 per cent for prosthetic reasons, 6.8 per cent at the request of patients, and 14.4 per cent for other

reasons. Caries accounted for the removal of 6.3 per cent more teeth than did periodontal disease.

Of 924 teeth extracted because of caries, 749 (81 per cent) were lost by the age of 39 years. Of 870 teeth removed because of periodontal disease, 202 (23.2 per cent) were lost by the end of the fourth decade. Men lost 44.5 per cent more teeth from periodontal disease than from caries. Women lost 49.9 per cent more teeth from caries than from periodontal disease. The lower anterior teeth of patients of both sexes were affected least by caries and most by periodontal disease.

For every tooth in women (with the slight exception of the upper first molar), the incidence of caries was higher than for the corresponding tooth in men. In both sexes, the lower first molar had the greatest loss from caries and the lower central incisor had the greatest loss from periodontal disease.

The results of this study differ from the results of the study by Krogh (1958), the differences apparently being related to the differing socioeconomic status of the two populations studied. Krogh's subjects were predominantly white, of middle to high socioeconomic status. The subjects in the present group were predominantly Negro. The subjects in Krogh's study showed a much smaller incidence of tooth mortality due to periodontal disease.

Andrews, George, and Krogh, Harold W. Fort Ord, Calif. Permanent tooth mortality. D.Progress 1:130-134 Jan. 1961

Extractions

- Mandibular third molars. Howe.....404
Treatment with trypsin. Hansen.....404

Anesthesia and analgesia

- Disinfection of the skin. Homann.....405
Body temperature regulation. Stephen.....405
Physical appraisal. Kaufman.....406
Portable anesthetic unit. Stephens.....406

Oral surgery

- Repair in plastic surgery. Fryer.....407
Treatment of cleft palate. Ivy.....408

Therapeutics

- Hemostatic agents. Sprague.....409
The placebo effect. Březinová.....409
New dental anesthetic. Berling.....410

Prosthodontics

- Investment materials. Hollenback.....410
Topographic chart. Balogh.....411
Impression for partial denture. Chase.....412

Oncology

- Precancerous conditions. Sharp.....412
Warthin's tumor. Macksood.....413
Precancerous oral lesions. Menning.....414

Periodontics

- Oral pigmentation. Dummett.....415
Detection of bruxism. Nadler.....415
Prosthodontic treatment. Staegemann.....416

Pathology

- Contact dermatitis. Böhne.....417
Temporomandibular joint pain. Georgiade...418

dental practice



Extractions

The inferior dental nerve and extraction of mandibular third molars

In a two-year period 1,355 mandibular third molars were extracted from 1,046 unselected patients attending the Eastman Dental Hospital in London.

Of the 1,355 molars, 837 (61.7 per cent) showed an "apparent relationship" (appeared roentgenographically to be in intimate relationship) to the inferior dental canal. Operation showed that 101 teeth (7.45 per cent of all teeth and 12.07 per cent of the teeth in apparent relationship) were in "true relationship" to the canal, that is, were found to be in an intimate relationship with the inferior canal and its contents.

Mandibular third molars in true relationship to the inferior dental canal were about 50 per cent more common in women than in men, and postoperative impairment of labial sensation was almost twice as common in women as in men.

Further analysis showed that the older the patient is when the mandibular third molar is removed, the more chance there is of grooving, notching or perforating the adjacent tooth, and the greater is the likelihood of postoperative impairment of labial sensation.

Seventy instances of impairment of labial sensation occurred in the series; in 36 of these the third molar was in true relationship and in 34 it was not. Of the 101 instances of mandibular third molars in true relationship, in 36 instances (35.64 per cent) postoperative impairment of labial sensation occurred in the patient.

In the standard intraoral roentgenograms of the 1,355 teeth, an apparent relationship to the inferior dental canal was noted in 837 teeth. In each of the 837 instances, the authors attempted preoperatively to determine whether or not an intimate relationship existed between the tooth root and the inferior dental canal, and the forecast was checked with the operative findings. Three signs were used in interpreting the roentgenograms: (1) the presence of a band of radiolucency across the tooth root, (2) narrowing of the canal, and (3) deflection of the roots by the canal.

The authors predicted a true relationship existed in 110 teeth; at operation a true relationship was found in 101 teeth, so 9 incorrect forecasts out of 837 (an error of 1.075) resulted.

Preoperative knowledge of the presence of grooving, notching and perforation of mandibular third molar roots by the inferior dental canal can be utilized by the dentist in several ways to reduce the possibility of postoperative labial anesthesia, the most unpleasant complication in the extraction of mandibular third molars.

Howe, Geoffrey L., and Poyton, H. G. Eastman Dental Hospital, London W.C.1, England. Prevention of damage to the inferior dental nerve during the extraction of mandibular third molars. *Brit.D.J.* 109: 355-363 Nov. 1, 1960

Treatment of dry socket with trypsin

In a recent one year period, 1,079 teeth were removed from patients at the Dental Clinic, Naval Main Base, Copenhagen. The subjects were enlisted men 18 to 25 years old. Exactly 861 teeth were removed by simple extraction and 218 by surgical procedures. Immediately after the extraction the alveolus was covered with a large gauze-tampon and the patient instructed to keep his teeth in contact for 20 minutes.

In 33 (3.2 per cent) of the instances, involving 30 patients, alveolitis sicca dolorosa developed. After simple extractions the incidence of dry socket was 2.0 per cent, whereas after surgical removal it was 7.3 per cent. Alveolitis sicca dolorosa occurred twice as frequently in the lower jaw (4.1 per cent) as in the upper (2.0 per cent). The first and third molars in the lower jaw showed the highest incidence of dry socket (5.8 per cent for each of the tooth types), followed by the maxillary second molar, the mandibular second molar, the maxillary bicuspid, the maxillary first molar, the mandibular bicuspid and the maxillary third molar. No instances of alveolitis sicca dolorosa occurred in incisors or cuspids.

The main complaint of patients with alveolitis sicca dolorosa is severe pain.

The 33 dry sockets were treated with trypsin administered in the form of cones containing 5 mg. pure crystalline trypsin with an enzyme activity of 31,200 Armour units and a 5 per cent, a

2 per cent and a 1 per cent trypsin paste containing 50, 20 or 10 mg. of pure crystalline trypsin per gram of paste, with an enzyme activity of 312,000, 125,000 and 62,500 Armour units. The cones were placed directly in the alveoli without irrigation prior to application. The cones were covered with the trypsin paste nearly filling the alveolar defect. The average number of applications of trypsin was two, the period between the two applications was three hours.

The severe pain disappeared completely within 48 hours after the first application in 87 per cent of the patients; however, 13 per cent did not show improvement after two treatments.

Among the 30 patients treated with trypsin, 18 developed no complications, 8 had mild complications and 4 had severe complications. The complications consisted of a burning feeling of the tongue, the palate and the buccal mucosa in the region of the alveolitis sicca dolorosa; in one patient aphthalike lesions of the palate occurred. The symptoms disappeared when the trypsin treatment was discontinued.

Hansen, Erick Hjoerring. Dental Clinic, Naval Main Base, Copenhagen, Denmark. Alveolitis sicca dolorosa (dry socket): frequency of occurrence and treatment with trypsin. *J.Oral Surg.,Anesth.& Hosp. D.Serv.* 18:409-416 Sept. 1960

Anesthesia and analgesia

Use of isopropyl alcohol for disinfection of the skin

For disinfection of the facial skin or the oral mucosa prior to injection, German dentists, almost routinely, use diluted alcohol (in a concentration of 70 per cent by weight or 75 per cent by volume).

The use of isopropyl alcohol (in a 50 per cent aqueous solution) was recently recommended in the dental literature. However, many patients find the characteristic odor of isopropyl alcohol extremely unpleasant.

The difference in the antiseptic effect between diluted alcohol and isopropyl alcohol is not great. However, the n-propyl alcohol (in from 35 to 50 per cent concentration by volume) possesses a

more pleasant odor than either diluted (ethanol) alcohol or isopropyl (isopropanol) alcohol. This clear, colorless liquid mixes easily with water and most organic solvents, and its external use is recommended in all dental patients, especially diabetic patients. However, neither of the three antiseptic agents is recommended for internal use, including disinfection of the oral mucosa prior to injection.

Iodine, mercocresol or nitromersol tinctures are the agents of choice to be used for disinfection of all mucous membranes prior to injection.

Homann, C. Arzneimittelkommission, Deutsche Arzteschaft, Göttingen, Germany. Use of isopropyl alcohol for disinfection of the skin. *Med.Klin.* 55:2227 Dec. 2, 1960

Body temperature regulation during anesthesia in children

In modern, air-conditioned operating rooms, maintained at temperatures between 20 and 22.2°C. (68 and 72°F.), the body temperature of children is prone to decrease significantly during anesthesia and operation. A reduction in the body temperature will be promoted further by utilizing a non-rebreathing anesthetic technic, whereas the retention of heat or a reversal of the hypothermic trend will be enhanced by employing a to-and-fro or circle anesthetic technic.

In an effort to determine what changes in body temperature occur in modern operating rooms, the rectal temperature was taken with low-reading thermometers at the conclusion of anesthesia and operation in a consecutive series of 607 patients up to the age of 12 years, operated on at the Duke University Medical Center, Durham, N.C.

Various types of surgical interventions were performed, and the time in the operating room varied between 30 minutes and 6 hours. The temperature of the operating room varied between 20 and 22.2°C. with a relative humidity of from 50 to 60 per cent.

Nearly all patients in this series had a rectal temperature of 37.5°C. preoperatively. Postoperatively, however, a marked hypothermia was observed frequently, mainly in the younger children. Many of the patients in this age group were

subjected to operations in the maxillofacial region, the head or the neck, and the remaining areas of their body surfaces were covered with several layers of drapes. In the groups of children older than two years, more heat regulation was apparent, although the average rectal temperature at the termination of anesthesia and operation was less than normal.

Although the purposeful provision of moderate hypothermia during certain surgical interventions has been endorsed as a valuable adjunct to the management of patients, the reduction of the basal metabolism (approximately 6 per cent for each degree drop in body temperature) produces certain hazards, such as the development of the syndrome of scleroma which often is a fatal complication of surgery.

In surgical situations in which spontaneous hypothermia may occur, recognition of changes in body temperature and regulation of this temperature are important factors in management of patients, especially children.

To accomplish immediate recognition of temperature changes during anesthesia and operation, the patient's temperature must be monitored continually.

To prevent surgical complications associated with either hypothermia or hyperthermia, control of the patient's temperature can be obtained satisfactorily by utilizing the Aquamatic-K-Thermia unit (Görman-Rapp), an automatic heating-cooling apparatus which regulates the body temperature of the patient within 0.5°C. of the level preset by the operator.

The unit was found to be reliable and consistent in anesthesia and surgical interventions performed in over 300 children.

Stephen, C. R.; Dent, S. L.; Hall, K. D.; Knox, P. R., and North, W. C. Division of Anesthesia, Duke University Medical Center, Durham, N. C. Body temperature regulation during anesthesia in children. *J.A.M.A.* 174:1579-1585 Nov. 19, 1960

The history and physical appraisal of a patient

The purpose of a preanesthetic evaluation of a patient by a dentist is not to diagnose or treat the systemic conditions he may find, but to be-

come aware of their presence and the influence they may have on the anesthetic effect or the outcome of the surgical procedure.

With a careful physical appraisal, obtained from a brief printed questionnaire, supplemented when indicated by more detailed questioning, clinical observation, laboratory tests and medical consultation, untoward reactions may be averted and, in some instances, life itself may be saved.

A printed questionnaire checked and signed by the patient is the most satisfactory method of obtaining information. It should include questions which relate to the patient's past and present health status; whether presently under a physician's care; allergic reactions, drug sensitivity and experiences in previous extractions, particularly with respect to bleeding and anesthesia.

Usually, a few well-directed questions will suffice to discover whether the patient is a good operative risk. If such questioning provides a lead to possible chronic systemic disease, more detailed questions should follow.

An oral examination may yield important information regarding the general systemic picture. When a disease of the blood is suspected, a complete blood count should be performed at a local laboratory or hospital. Examination of the skin may produce significant findings. The examination of the face and its expressions may yield valuable information. If a patient is diabetic, it is important to know if the disease is controlled. Diabetic patients heal poorly and are subject to infection. It is wise to premedicate diabetic patients with antibiotics 24 hours before surgery, at the time of operation, and 24 hours postoperatively.

Kaufman, Myron. 7411 Third Avenue, Detroit, Mich. The history and physical appraisal of a patient. *J.Michigan D.A.* 43:5-7 Jan. 1961

Simple portable anesthetic apparatus

Equipment developed by the British Army, primarily to meet the requirements for brief anesthesia of mass casualties, has been found to provide a simple, effective method for anesthesia in the dental chair.

The apparatus (Fig. 1) consists solely of a face mask, two-way tap and a 6 liter double-ended re-



Figure 1 Component parts



Figure 2 Ready for anesthetic use in the dental chair

breathing bag. Cyclopropane, in a nonexplosive mixture with oxygen and nitrogen, is contained in miniature sparklet bulbs. Each charge delivers about 5.5 liters of gas composed of 40 per cent cyclopropane, 30 per cent oxygen and 30 per cent nitrogen; the mixture has been selected to produce a safe and adequate level of anesthesia without risk of overdosage or lack of oxygen.

Figure 2 shows the apparatus ready for use.

Administration is simple. The bag—empty and shut off from the mask by the two-way tap—is charged with the standard mixture of gases, and the charging device then is detached. A non-return valve prevents any loss of the bag's contents. The mask is applied to the patient's face, care being taken to ensure a gas-tight fit. The tap is turned on and the patient breathes in and out of the bag. Consciousness is lost after three to six breaths, after which there may be a phase of purposeless movements and breath holding. The anesthetist ignores this, holds the mask firmly on the patient's face, and maintains a clear airway by elevating the jaw. Breathing soon reassumes a regular rhythm, and the patient is in the surgical plane of anesthesia, a stage reached after about one minute. The face mask is removed and the dental operation can start. The patient will remain fully anesthetized for 1.5 to 2 minutes, during which time his jaw is relaxed. Subsequent recovery of consciousness is rapid and complete within an additional 3 minutes.

It is claimed that this pocket-sized apparatus provides excellent anesthesia for brief dental procedures in the chair. Induction and recovery are swift, after effects are minimal, and full oxygenation of the patient is assured. The use of the apparatus requires little skill and the technic is easily mastered. The method is as suitable for

the robust, resistant adult patient as it is for the frail, nervous child.

Stephens, K.F. 13 Hill Street, Berkeley Square, London W.1, England. The C.O.N. portable anaesthetic apparatus. *Brit.D.J.* 109:457-458 Dec. 6, 1960

Oral surgery

Direct approach to repair in plastic surgery

The direct approach to repair in plastic surgery means applying known surgical principles and procedures to the deformity. Construction or restitution of a feature or a part then becomes possible with the minimum number of operations, less pain and discomfort, and the least time lost for the patient in the hospital or between operations.

The treatment of facial injuries is a good example of directness in the approach to repair. The term "compound facial injury" is a reminder that there may be injury to the underlying bony framework of the face after trauma. After roentgenographic confirmation, reduction is performed, as soon as the patient's general condition permits, by replacing those bones into proper position through the simplest means possible. Direct approach to the fragments and reversing the force causing the trauma have been made almost axiomatic by common usage. Union results after direct fixation with wire pins driven across the face by employing a cantilever effect from any stable point in the face. Direct wiring of facial fractures is done when possible through open soft tissues. In many instances, primary definitive re-

pair of a compound facial injury gives the best possible restitution and may avoid later operations.

Cleft lip repair remains a perpetual challenge to the plastic surgeon. A completely normal lip without scar is the objective. The best results are obtained by following simple, measurable markings on the lip and nose and concentrating on the details of repair. This direct approach can convert an acceptable into a superior effect.

Construction of an essentially normal appearing palate, where there has been a congenital cleft, usually is possible. Closure and elongation, where necessary, of mobilized palatal soft tissue in one operation establish a normal mechanical and physiologic relationship. The nervous, muscular and vascular components are not disturbed. Indirect operations, such as on the posterior pharyngeal wall, are left for those instances in which the normal is impossible.

Perfection in plastic surgery has always been sought but seldom attained. The best results are obtained by the plastic surgeon with uncommon common sense consistently following fundamental surgical principles, never tempted to fit a deformity, traumatic or congenital, into a favorite category of repair.

Fryer, Minot P. Washington University School of Medicine, St. Louis, Mo. Direct approach to repair in plastic surgery. *Surg.Gynec.& Obst.* 11:509-510 Oct. 1960

Posterior pharyngeal flap surgery in the treatment of cleft palate

The old controversy of surgery versus prosthesis in cleft palate treatment apparently is being revived by some proponents of the posterior pharyngeal flap procedure. Both this procedure and prosthetic treatment have their indications and contraindications, and the choice should depend on suitability for the individual patient. In a borderline case, the results of the posterior pharyngeal flap operation (or of any other surgical operation) are for the most part irreversible, whereas the prosthetic speech aid does not have this disadvantage.

Among the fallacious reasons advanced by some advocates of the posterior pharyngeal flap

operation, as opposed to prosthetic appliances, are the following:

1. Prosthetic appliances depend for successful retention on the presence of a certain number of natural teeth.
2. Dental prosthetic appliances are unhygienic.

Neither of these two assertions is true.

The most valid argument against the prosthetic speech aid is its vulnerability to breakage and need of repair or reconstruction during the lifetime of the patient. If acceptable speech apparatus can be provided by some form of surgery, it should be preferred and the prosthesis reserved for cases where surgery cannot succeed.

Neither the surgeon nor the prosthodontist should arbitrarily select his favorite method of treatment, to the complete exclusion of the other, but should listen to what the other fellow has to say and arrive at the best solution for the particular patient, after consideration and discussion of all factors involved.

Some prosthodontists are appealed to by patients who seek relief by other measures after having had posterior pharyngeal flap operations which may be regarded as operative failures. The patients in whom the operation succeeded do not shop around, and the prosthodontist, seeing only the failures, may form a poor opinion of the posterior pharyngeal flap operation. The surgeon, too, checking on his postoperative results, may not see some of the patients in whom the operation failed, and may gain an overly optimistic opinion of his achievements. It would be valuable and enlightening if some form of conference could be held by surgeons, prosthodontists and speech therapists for the review and evaluation of all cases. Similar or almost identical cases treated by the two methods could be compared.

Unfortunately, some medical men seem inherently unwilling to accept clinical findings or recommendations by dentists, and to treat the dentist as a consultant on an equal basis in this field. This narrow-minded, superior attitude is totally unjustified in view of the broad education of the present-day dentist as to the relation of the mouth to the body and his intimate knowledge of mouth anomalies, as compared with that of the average physician.

The pretreatment team approach will result in fewer failures and disappointments in the treatment of patients with cleft palate.

Ivy, Robert H. 104 Dalton Road, Paoli, Pa. Some thoughts on posterior pharyngeal flap surgery in the treatment of cleft palate. *Plast.&Reconstr.Surg.* 26: 417-420 Oct. 1960

Therapeutics

Re-evaluation of hemostatic agents

Probably no other single form of treatment is applied with such empiricism and as illogically as the administration of hemostatic agents. It is understandable that the practitioner faced with the problem of severe hemorrhage of an unexplained etiology may resort to any therapeutic measure that appears beneficial, no matter how empirical the approach. Unfortunately, and at times inexcusably, hemostatic agents are used before an adequate appraisal of the hemostatic mechanism of the bleeding patient has been made.

The patient's history is a valuable source of information, and often will prove to be more informative than laboratory tests of the bleeding and clotting time.

The pharmaceutical industry has bombarded the dental and medical professions with a vast array of hemostatic agents which are claimed to possess beneficial effects in a wide spectrum of bleeding disorders. It cannot be denied that some of these agents may prove effective to a variable degree in the control of hemorrhages. However, the better defined the indications for the use of these agents, the greater the beneficial effect, demonstrated by double-blind studies. Such tests should be required before hemostatic agents are approved for release.

Similar studies of existing hemostatic agents are almost totally lacking, although there is a great need for an adequate evaluation of this heterogeneous group of compounds.

It is a common impression that the preoperative administration of vitamin K minimizes bleeding, and this drug is almost routinely prescribed as a preventive measure. It is possible, although

not established by clinical evidence, that vitamin K possesses a nonspecific hemostatic property if used in healthy persons, but it was found useless for purposeful reduction of the prothrombin activity in dental patients or those undergoing tonsillectomy.

Dentists and physicians are the chief dispensers of hemostatic agents, and it would seem appropriate that they lead the way in an attempt to clarify this problem. Until more definitive studies are available, it would behoove the individual practitioner to be more critical in his appraisal of this form of therapy.

Sprague, Charles C. Tulane School of Medicine, 1430 Tulane Avenue, New Orleans 12, La. Re-evaluation of hemostatic agents. *Arch.Int.Med.* 107:72-73 Jan. 1961

Placebos and the psychic mechanism

Investigations of the effects of various placebos, carried out in cooperation with faculty members of the Dental School at the Psychiatric Clinic of the University of Prague, demonstrated that several pharmacologically inactive substances exhibited a high degree of therapeutic effectiveness.

Pronounced alleviation of pain was experienced by 35.2 ± 2.2 per cent of 1,000 dental patients with postextraction pain, untreated carious lesions, disorders of the temporomandibular joint or trigeminal paralysis.

The relative constancy of the placebo effects in a comparatively wide assortment of subjective and objective pain sensations suggests that placebos may activate a fundamental psychic mechanism, a mechanism that deserves intense research studies.

The results of the present investigation indicate that placebos appear to be most effective at a time when stresses and tensions are extremely strong. This observation supports the concept of a specific reaction phase as an important part of the analgesic action of a drug or placebo.

In isolated instances, the administration of a placebo produced not only therapeutic results but also toxic effects. Unquestionably, the psychologic reaction component of pain sensations has the power to produce gross physical changes. It is, therefore, essential that not only the thera-

peutic effect of a new drug be evaluated by a controlled double-blind test but that the study of possible side effects be subjected to identical controls.

Before any attempt is made to determine the efficacy of a new drug, a standard of reference must be established and utilized for comparison of the placebo effect with that of the drug.

Whenever individual judgment becomes a component of the interpretation of the results of an investigation of a new drug—and this is often the case—conscious and unconscious bias must be avoided in both the experimenter and the conclusion.

Březinová, Vlasta. Armády 34, Prague 6, Czechoslovakia. *Placebos. Casop.lék.česk.* 49:1252-1254 Sept. 23, 1960

A new dental anesthetic

A new local anesthetic of the anilide type— α -n-propylamino-2-methylpropion-anilide—was tested as to its efficiency as a dental anesthetic, by the method of Björn (1947).

The efficiency of the anesthetic, termed L67, was compared in 2, 3 and 4 per cent solutions, with and without epinephrine, with the efficiency of 2 per cent lidocaine solutions, with and without epinephrine. About 393 anesthetics were performed on 82 subjects. In each test 1 cc. of one of the test solutions was injected around a maxillary lateral incisor.

L67 was found to be a more potent anesthetic than lidocaine. The duration of analgesia induced by L67 (22 to 26 minutes) can be considered sufficient for most dental procedures. The duration of soft tissue anesthesia was considerably shorter with L67 than that obtained with 2 per cent lidocaine with epinephrine, which may be an advantage in clinical work.

The analgesia incidence (percentage of test subjects in which analgesia of the lateral incisor was obtained) and analgesia latency (percentage of subjects showing a latency period of two minutes or less) obtained with 4 per cent L67 without epinephrine were high. The durations of the tooth analgesia and the soft tissue analgesia were short (on an average, 11 minutes and about 60 minutes, respectively).

The following solutions of L67 are considered worthy of clinical investigation: 4 per cent without epinephrine; 2 per cent with epinephrine 5 micrograms per milliliter, and 3 per cent with epinephrine 3.33 micrograms per milliliter.

Berling, Claes, and Björn, Hilding. Royal School of Dentistry, Malmö, Sweden. Tests of a new dental anesthetic in man. *Sveriges tandlak.forb.Tidn.* 52:511-522 Oct. 1, 1960

Prosthodontics

A study of the separation of ingredients of investment materials

Casting investments consist substantially of ground silicon (about 75 per cent), gypsum plaster (about 25 per cent) and a few additives. All reputable manufacturers mix and package their investment compounds in an acceptable manner. However, during transportation the ingredients may become separated.

Six popular brands of investment materials were tested. In initial tests, the investment materials were placed in a homogenizer which produced a short, jarring, vertical movement not unlike the agitation produced by a freight car. After 30 minutes, 150 Gm. of material was skimmed from the top of the mass, and another 150 Gm. skimmed from the bottom. Each portion of material was given three tests with the quartz cylinder method of mold measurement (Hollenback and Rhoads, 1960). Another test was made in the same manner, except that the cylinder containing the investment was transported over a smooth, paved highway for 160 miles. The two tests gave practically the same result, and in remaining tests separation was produced by highway transportation.

The tests showed conclusively that the separation of the ingredients of a casting investment is sufficiently large to constitute a problem. Agitation causes the heavier silicon oxide to gravitate to the bottom of the container and the lighter plaster to rise toward the top.

When separation of the ingredients of a casting investment occurs, the ingredients will not be

present in their proper proportion in any part of the container. Separation probably exists in all packaged investment materials. If accurate castings are to be made consistently, each package of investment material must be remixed thoroughly. It seems advisable to purchase investment materials only in small containers, for ease of remixing.

Hollenback, George M., and Rhoads, John E. 5255 Encino Avenue, Encino, Calif. A study of the separation of ingredients of investing materials. *J. South. California D.A.* 28:384-387 Dec. 1960

Topographic charts of the edentulous mouth and the upper surface of the tongue

Various types of topographic charts for recording changes in the oral cavity have been developed to be used for patients with a complete or partial dentition, but similar charts for edentulous patients are not yet available.

Present recording methods to describe the changes observed in an edentulous mouth or occurring on the upper surface of the tongue are inadequate. Although the anatomy of the edentulous mouth should be known to every dentist, the descriptive anatomy and its specific nomenclature are hardly suitable to describe accurately the results of prosthodontic and oncologic examinations. Proper topographic recording, however, is essential for oncologic serial examinations (tumors, ulcerations and erosions), for histopathologic examinations (localization of the exact excision site), for determination of the individual pain threshold before injections, and for detailed prescription to the dental technician (or laboratory) to obtain properly fitting complete dentures.

The topographic chart (Fig. 1) permits proper recording of the anatomical (patho-anatomical) conditions in the edentulous mouth. The numbers 1 to 10 designate the diagnostically significant points in the region of the upper lip and the upper jaw. During the oral examination, the dentist dictates his observations to his assistant who immediately records all anatomically important changes on the chart. The difference between the analogous parts of the jaws is to be identified by the number 10, that is the quadrant in the upper jaw marked 1, the identical quadrant in the lower

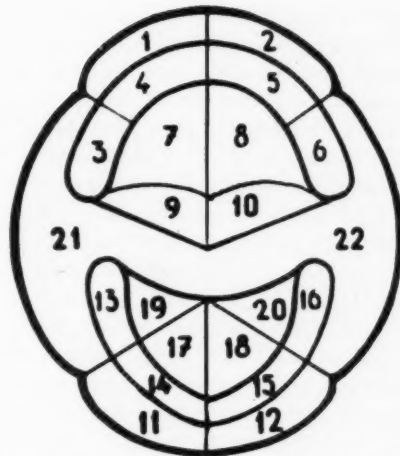


Figure 1 Topographic chart of the edentulous mouth. 1 to 10 = anatomic sites in the upper jaw. 11 to 20 = anatomic sites of the lower jaw. 21 to 22 = regions of the mucous membrane of the cheeks

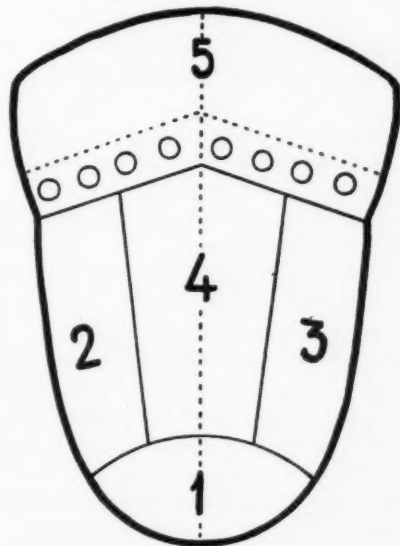


Figure 2 Topographic chart of the upper surface of the tongue. 1 to 5 designate the pathoanatomically important regions of the tongue

jaw is marked 11, and a specific site labeled 3 in the upper jaw, is labeled 13 in the lower jaw. The numbers 21 and 22 designate the mucous membrane of the cheeks.

Pathologic changes on the upper surface of the tongue (*dorsum linguae*) are often seen in dental practice. Impairment of taste sensation is often associated with such pathologic changes involving the taste buds of the fungiform papillae of the tongue's upper surface. In the topographic chart (Fig. 2) of the upper surface of the tongue, the numbers 1 to 5 designate the most important anatomic regions of the tongue. The use of both charts for patient's history and the dentist's files permits an easy comparison of the condition before and after treatment.

Balogh, K. Stomatologic Clinic of the University of Budapest, Maria Utca 52, Budapest 8, Hungary. Topographic charts of the edentulous mouth and the upper surface of the tongue. *Zahnärztl. Welt & Reform* 61:575 Sept. 25, 1960

Adaptation of rubber-base impression materials to removable partial dentures

Some of the rubber-base impression materials are adequate for impressions for removable partial dentures, but must be handled carefully.

The main disadvantage of rubber-base material is its dimensional instability, which may be produced by the following factors: (1) continuous polymerization, (2) release of internal strains, (3) use of an impression plastic tray, (4) insufficiency of adhesive and failure to allow it to dry, (5) an incorrect mixing time, (6) variation in the ratio of the accelerator to the base, (7) a material thickness of more than 2 to 3 mm., (8) interference with the development of the elastic properties by making the impression after the material has started to set or by removing the impression from the mouth before ten minutes has elapsed from the start of the mix, (9) storage of the impression for more than 30 minutes in air or storage in water, and (10) failure to pour the cast immediately.

Among the procedures which will minimize or nullify the disadvantageous factors are the following: (1) use only an acrylic resin tray, (2) use a minimum spacer or no spacer, (3) use an

accelerator-base ratio of 1:1, (4) mix for exactly 45 seconds, (5) apply a good covering coat of adhesive and allow it to dry thoroughly, (6) carry the loaded tray to the mouth immediately, (7) allow a full ten minutes from the start of the mix before removing the impression from the mouth, (8) store the finished impression only in air for a minimum length of time, (9) box the impression, and (10) pour the cast immediately.

An acrylic tray is made directly on a cast poured in an alginate impression. Space is created over the crest of the mandibular ridge and sharp mylohyoid ridges by removing material from the tray. Holes are cut for the escape of excess impression material. The labial and buccal borders of both trays are reduced 2 mm. from the tissue reflections. The finished impressions are boxed.

To make an impression for removable partial dentures, an individual acrylic tray is made on a study cast. A spacer of one thickness of baseplate wax is placed over all teeth, but the tray is made directly against the posterior edentulous ridges. The borders of edentulous spaces are trimmed as for an impression for complete dentures. The part of the tray which will cover the teeth is trimmed back so that only the teeth and any parts of the gingival surfaces that are needed on the cast are covered. Light-bodied impression material is placed around the teeth with a syringe and spatula. Then, a tray filled with regular material is seated and allowed to set ten minutes.

Chase, Wilson W. School of Dentistry, University of Southern California, Los Angeles, Calif. Adaptation of rubber-base impression materials to removable denture prosthetics. *J. Pros. Den.* 10:1043-1050 Nov.-Dec. 1960

Oncology

The treatment of precancerous oral mucous membranes

In general cancer control, prophylaxis has been one of the least investigated therapeutic measures. In oral cancer, studies show that certain precancerous conditions can be reversed by a simple regimen.

The subjects in this study were 120 patients with subjective complaints referable to the oral mucous membranes. Atrophic and degenerative changes in the oral mucosa were observed in all patients. Other precancerous conditions frequently noted were leukoplakia, extensive superficial scarring, erosions, chronic inflammation, vascular injection and superficial ulcerations.

Thirty-four patients were unable to tolerate their dentures full time. Of the remaining 86 patients, chronic inflammation was observed in 38, atrophy in 22, leukoplakia in 14, erosions in 8, and superficial ulcerations in 4. All patients received the same medication.

In treatment of sore mouth, dentures must be properly adapted, and allergy or sensitivity to denture material must be ruled out.

A complete history, physical examination and laboratory studies were made for each patient. The average diet in these patients was found to be lacking in vitamins, particularly in the B-complex group.

The patients with achlorhydria were made more comfortable by supplementing their diet with hydrochloric acid tablets.

Vitamin supplementation in many combinations, protein supplements, brewer's yeast, and liver were tried. Occasional improvement was obtained with vitamins B₁, B₆ and B₁₂ in various combinations, both orally and parenterally. Finally, a tablet was prepared containing 750 mg. desiccated liver, 5 mg. vitamin B₁₂ in the form of Ionex₁₂, 1.5 mg. riboflavin, and 0.5 mg. folic acid.

Patients received from three to six tablets daily.

Treatment of the 34 patients with a low tolerance for dentures was continued for from three to six months. Two patients had unilateral burning of the tongue and showed no response to treatment. Two patients were excluded because of their inability to follow directions. Within two to six weeks after treatment began, all the remaining 30 patients were able to wear their dentures comfortably 24 hours a day. Six patients continued to have intermittent mild soreness or dryness over the oral surfaces, whereas the other 24 patients were completely relieved of all oral complaints within a few months.

General improvement was noted in the other group of 86 patients with precancerous lesions. The response to treatment was less dramatic.

However, superficial ulcerations cleared up in one to two months, and mucosal atrophy and inflammation disappeared in three to four months. Leukodermic patches and the superficial lesions of leukoplakia frequently disappeared.

It is presumptuous at this time to state that this or any other medication will prevent squamous cancer of the oral region.

This preliminary study appears to indicate the presence of unidentified substances in crude liver which are responsible to a great extent for the relief of subjective oral complaints and for the objective reversal of abnormal degenerative changes of the mucous membrane to a more normal state.

Sharp, George S. Pasadena Tumor Institute, Pasadena, Calif. The treatment of precancerous oral mucous membranes. *Oral Surg., Oral Med. & Oral Path.* 13:1065-1071 Sept. 1960

Warthin's tumor of the parotid gland

Of 209 parotid tumors indexed from 1920 to 1960 at the Henry Ford Hospital, Detroit, Mich., 19 (9 per cent) were classified as Warthin's tumor of the parotid gland. The 19 tumors were reviewed microscopically and each was found to be a typical papillary cystadenoma lymphomatosum.

The patients ranged in age from 25 to 69 years, the average age being 54 years. There were 15 men and 4 women. The average duration of a noticeable parotid mass prior to surgical removal was 35 months. The tumors ranged in size from 1 to 6 cm., the largest tumors being those present for the longest period of time. Most of the tumors grew slowly. Fourteen of them were in the superficial lobe of the parotid gland, two in both the deep and superficial lobes, and three in lymph nodes outside the parotid gland but adjacent to it. In only one patient was there bilateral parotid involvement.

Typically, Warthin's tumor is painless, nontender and nonexudative; it usually occurs at the angle of the jaw. It is firm to palpation and may be fixed to underlying structures but usually is not attached to the overlying skin.

In only 1 of the 19 cases was the correct diagnosis of Warthin's tumor made prior to surgery. Nine of the 19 tumors were diagnosed preoperatively as mixed tumors of the parotid gland. Cus-

tomy management has been local surgical excision. Irradiation generally is not indicated.

Papillary cystadenoma lymphomatosum is grossly, as well as microscopically, characteristic, and in most instances should be recognized at the time of surgery. The features which are most helpful in differentiating it from other lesions of the parotid gland are the tan lymphoid appearance and the unusual cystic places containing turbid material.

The bulk of evidence indicates the origin of these tumors to be from parotid duct epithelial inclusions within lymphoid tissue in the region of the parotid gland and adjacent soft tissue.

Because papillary cystadenoma lymphomatosum may be multicentric, consideration should be given to total parotidectomy as the primary form of surgical treatment.

Macksood, Albert J.; Smith, Roger F., and Marshall, Richard B. Henry Ford Hospital, Detroit, Mich. Warthin's tumor of the parotid gland. *Henry Ford Hosp.M.Bul.* 8:446-454 Dec. 1960

Precancerous lesions in the oral cavity

Euler (1957) reported that in 597 instances of oral carcinoma investigated, an average interval of seven months occurred between the patient's initial visit to a dentist and his admittance to a cancer clinic for treatment, whereas the average interval between the patient's first visit to a physician and the admittance to the clinic for treatment was about four weeks.

Failure of dentists to recognize early the presence of precancerous oral lesions also was demonstrated by the investigations of Miller (1955), Franke and others (1958), Fasske and others (1959), Morgenroth (1957), Spreng and others (1949) and Sugar and Banoczy (1959).

It seems, therefore, necessary to provide dental practitioners with clinical facts on the pathology of precancerous conditions manifested at an early stage in the oral cavity to enable them either to recognize the presence of such lesions almost immediately or at least to suspect the presence of a precancerous condition to be diagnosed by a specialist.

Erythroplasia (of Queyrat) is a precancerous condition characterized by circumscribed, ery-

thematous, velvety lesions appearing on the oral mucosa and the tongue. Malignant changes frequently occur in the form of squamous cell carcinoma, sometimes many years after the initial appearance of the lesions.

Lichen ruber planus is a chronic precancerous disease affecting the mucous membranes and the skin. The oral lesions are frequently associated with pathologic changes of the facial skin but in many instances the oral mucosa alone is affected. Small, pearly-gray, raised patches, occasionally forming lines by coalescing, occur on the buccal mucosa. The tongue may exhibit oval plaques from 1 to 5 mm. in diameter. The lips also may be affected but the corneous vermillion margin often modifies the appearance of the lichen ruber planus lesions. The gingiva, palate and floor of the mouth are occasionally affected. Malignant change to carcinoma of the lip has been observed.

Leukoplakia, whatever the causes may be, must be regarded as a precancerous disease, characterized by pearly-white or bluish-white spots on the surface of the tongue and the buccal membrane. The lesions are smooth and opaque. The disease in its neoplastic stage exhibits verrucous papillomatous and white patches which, however, may be stained by tobacco or pigmented food and appear dark yellow or even brown.

Syphilitic hyperkeratosis and senile keratosis are to be regarded as precancerous conditions, especially if evidence of dyskeratosis is present. Lesions often undergo mitotic changes in the prickle cell layers. If an invasion of the underlying tissues can be established, a clear diagnosis of malignancy may be made.

Hyperplasia of the gingival tissue, and soft or hard papillomas (as well as other benign oral tumors) are precancerous diseases. These lesions, however, are seen frequently by the dentist, whereas malignant changes are rarely observed. Chronic hyperplastic inflammation may predispose the oral tissues to continual growth, but there is a significant difference between the inflammatory proliferation of epithelial tissue and the heterogeneous, unrestrained growth of a malignant oral tumor.

Plummer-Vinson syndrome consisting of glossitis and atrophy of the oral mucosa besides dysphagia, hypochromic anemia, splenomegaly and atrophy of the pharynx and the esophagus,

is another disease predisposing to malignant changes (oral carcinoma).

Odontogenic cysts may give rise to squamous cell carcinoma.

Although not all chronic inflammatory lesions of the oral cavity should be regarded as precancerous, they should be excised as soon as possible, and the excised specimen be sent to a pathologist for diagnosis.

In spite of the various investigative methods available to recognize the precancerous lesions in the oral cavity, the dentist's initial clinical examination by thorough observation and careful palpation often will be decisive for the evaluation of the aspect of malignant change. If critically evaluated, recent research results whether in the fields of histochemistry or electronmicroscopy have not succeeded in gaining practical significance for making an early diagnosis of oral cancer possible.

The importance of cooperation between dental and medical practitioners and specialists cannot be overemphasized.

Menning, Harry. Seestrass 43, Berlin-Rahnsdorf, Germany. Precancerous lesions in the oral cavity. *München.med.Wschr.* 102:2283-2287 Nov. 11, 1960

Periodontics

Oral pigmentation

Melanin pigment may be found, in descending order of intensity, in the gingiva, cheeks, hard palate, tongue, soft palate and the floor of the mouth.

It is incorrect to describe the normal gingiva as "coral pink." Gingival pigmentation is not confined to members of the Negro race; it has been reported in the French, Filipino, Algerian, Arabian, Chinese, East Indian, German, Roumanian, Italian, Jewish, Greek, Puerto Rican, Syrian, Peruvian and Ceylonese. Nonpigmented oral tissues frequently are found in members of the Negro and other heavily pigmented races. Oral pigmentation is not limited to any one race, although it is a common characteristic of the more heavily pigmented races.

An accurate statement of the patterns of normal gingival pigmentation is as follows: "The color of the healthy gingivae is variable, ranging from a pale pink to a deep bluish purple. Between these limits of normalcy are a large number of colors which depend primarily upon the intensity of melanogenesis, the degree of epithelial cornification, the depth of epithelization and the arrangement of gingival vascularity. Moreover, color variations may be uniform, unilateral, bilateral, mottled, macular or blotched, and may involve the gingival papillae alone or extend throughout the gingivae and into other oral tissues. Nonpigmented gingivae are found more often in fair-skinned individuals, while pigmented gingivae are usually seen in dark-skinned persons."

Abnormal color changes affect the oral hard tissues. Superficial pigmentary changes may result from the use of tobacco, medicines containing iron or other metallic preparations, foods, stimulants and condiments. Changes in tooth color may result from tooth devitalizations resulting from trauma, and from endocrine disturbances, blood dyscrasias, or diseases of the liver.

In the oral soft tissues, color changes in the gingiva may result from disease or the inflammatory effects of irritants.

Dummett, Clifton O. Veterans Administration Hospital, Tuskegee, Ala. Oral pigmentation. *J.Periodont.* 31:356-360 Oct. 1960

Detection and recognition of bruxism

Causes of bruxism may be local, systemic, psychological or occupational. Because of the high incidence of bruxism, it should be suspected in all instances of periodontal disease.

A technic to detect bruxism is based on taking the patient's history, use of a questionnaire, and clinical examination, including the use of study cast and roentgenography.

It is the dentist's responsibility to recognize and detect bruxism, evaluate its effects (not all bruxistic acts are destructive), and treat and eliminate it when it is destructive.

In clinical examination, occasionally, certain signs of bruxism may be observed. A visible contraction of the musculature may be noted. The

intermittent bulging of the temporal and masseter muscles may occur. Attrition due to bruxism may give rise to sharp knifelike incisal edges in which traumatization of the lips, cheeks and tongue also may be effected, even to the extent of producing significant pathologic changes. Hypertonicity of the musculature caused by its constant activity in severe bruxism may be of diagnostic value.

Abnormal wear on selective teeth or the entire dentition should be looked for. Removable dentures may contribute to bruxism. If the swallowing habits of the patient are abnormal, they may contribute to bruxism.

Often, the answer to the direct question, "Do you grind, clench or click your teeth?" may be negative at the initial visit. This is not surprising; if the bruxism is of long duration, it is performed unconsciously.

More information on bruxism should be made available to the public. The profession should be more aware of this habit, and dental colleges should devote more time to the teaching and research of the causes, effects and treatment of bruxism.

Nadler, Samuel C. 98-10 Sixty-fourth Avenue, Forest Hills, N.Y. Detection and recognition of bruxism. *J.A.D.A.* 61:472-479 Oct. 1960

Evaluation of prosthodontic treatment in patients with periodontal disease

Prosthetic dentistry frequently offers an important addition to periodontics by amplifying or qualifying procedures designed to save teeth weakened by periodontal disease. The question is often asked, however, whether partial dentures to which splinting devices are attached will be able to counteract the stresses of mastication.

Measurements of tooth mobility and masticatory ability may help in deciding the value of prosthodontic procedures within the framework of periodontal therapy, but they do not offer adequate information as to the functional changes resulting from the masticatory movements. Prior to the final decision about whether or not prosthodontic treatment will be beneficial for patients with periodontal disease, the mandibular movements during chewing should be determined.



Figure 1 Rubinow's Masticatiograph

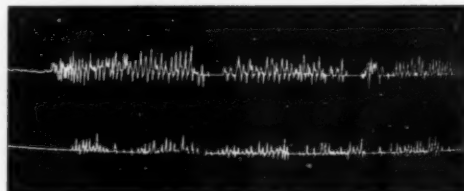
The method of choice for investigating the suitability of prosthodontic repair of a dentition already weakened by damage to the periodontal tissue is "masticatiography," developed by Rubinow.

Masticatiography is an extraoral measuring method which permits accurate registration of all masticatory forces exerted during the different mandibular movements, thereby offering sufficient information about the functional strength of the individual muscles of mastication.

The comparatively small apparatus consists of a membranoid capsule which, attached to the patient's chin, transfers the received masticatory pressure over an air-conducting tube to a vacuum chamber. There the pressure waves are registered by an automatic recorder and transmitted to the rotating drum of an attached kymograph (Fig. 1).

The pressure waves are presented in the form of graphic curves which, correctly interpreted, provide qualitative and quantitative conclusions about the forces activated during the different phases of mastication.

Figure 2 Masticatiogram of a patient with periodontal disease after application of a removable (Elbrecht) splint attached to a lower partial denture. The upper curve shows the masticatory function when the patient wears his appliance; the lower curve shows the decrease in function when the patient does not wear his appliance



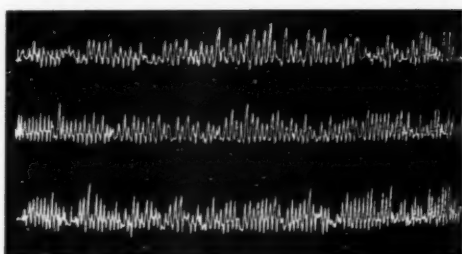


Figure 3 Masticatiogram of a patient with periodontitis after application of a removable splint attached to an upper partial denture. The upper and lower curves show the masticatory function when the patient wears his appliance; the center curve shows a less significant decrease in function when the patient does not wear his appliance

The application of splints attached to partial dentures for patients with periodontal disease usually results in a significant improvement of masticatory function. Fixed splints, generally used in the treatment of patients with periodontitis, produce an immediate improvement, whereas removable splints frequently cause an initial deterioration of the condition. Only after a comparatively long period during which the patient becomes accustomed to the combined orthodontic-prosthetic appliance does the desired increase in masticatory capacity occur. The improvement, even after such an extended period, is seldom as satisfactory as the improvement occurring after treatment with fixed splints (Fig. 2).

In several patients with periodontal disease, the masticatory function remained almost unchanged whether or not splints were attached to their partial dentures. This phenomenon (Fig. 3) can be explained by the fact that in all those instances the periodontal condition had been significantly improved by the preliminary treatment. However, if these patients declined to wear their splinted partial dentures for a longer time, a complete break-down in masticatory capacity occurred.

Masticatiography was used by the author to test the temporary or permanent success (or failure) of various periodontal and prosthetic treatment methods. The results revealed that many of the newer methods suggested for periodontal treatment were not sufficiently effective,

and that the main solution of the prosthetic-periodontal problem seems to lie more in preventive than in therapeutic procedures.

Prosthetics, as well as orthodontics, can play a major role in realigning teeth weakened by periodontal disease.

Every dental practitioner should be aware of the importance and availability of basic clinical procedures designed to control periodontal disease and to prevent severe complications

Staegemann, Gerd. Dental School, University of Greifswald, Rotgerberstrasse 8, Greifswald, Germany. 'Masticatiography,' a method to determine the value of prosthetic treatment for patients with periodontal disease. *Zahnärztl. Praxis* 11:219 Oct. 1, 1960

Pathology

Contact dermatitis caused by wearing surgical gloves

Dermatitis venenata (contact dermatitis) is a frequent occupational disease of dentists resulting from the primary irritant effect of a chemical substance or from the sensitization to a substance coming in contact with the skin. Although the basic material of surgical gloves (latex) can be ruled out as a causative factor, it is possible that some agents are added to accelerate the vulcanization of rubber.

These accelerating agents, thiuram and its derivatives or mercapto-benzothiazole, may cause allergic reactions such as erythema, vesicles and pustules on the skin of dentists wearing surgical gloves.

Tests for hypersensitivity to these agents can be performed by the dentists themselves. Small pieces cut from several commercially available brands of surgical gloves are applied to the skin. The use of adhesives to keep the pieces in position should be avoided, because adhesives in contact with the skin also can cause local or general allergic responses.

On removal of these pieces, after from five to seven days, the absence or presence of skin inflammation determines whether the surgical gloves can be considered as the causative factor.

However, if the symptoms of contact dermatitis recur independently whatever brand of surgical gloves is tested, the dentist should wear gloves made from a polymerized product (polyvinyl chloride).

Böhne, Ch. München-Gräfelfing, Germany. Contact dermatitis caused by wearing surgical gloves. *Zahn-ärztl. Praxis* 11:234 Oct. 15, 1960

Temporomandibular joint dysfunction and facial pain

Temporomandibular joint pain and associated facial pain may be due to a multiplicity of factors, including dental, traumatic, and psychosomatic, neurologic and pathologic causes.

Pain of dental origin may be caused by loss of the permanent posterior teeth, with loss of posterior vertical dimension which results in a shift in the bite. Overclosure of the mandible exerts greater pressure on the posterior portion of the capsule of the temporomandibular joint where the greatest region of vascularity and innervation is located. Unsatisfactory prosthetic appliances, bridges or restorations may derange the condylar positioning.

Traumatic pain may be caused by excessive opening of the bite when yawning, by a blow to the mandible, by biting on a hard substance, or by excessive strain or mouth opening during tooth extraction.

Treatment of pain of dental or traumatic origin should include: (1) restoration of normal occlusal relation; (2) application of dry heat two or three times daily to the affected joint region; (3) limi-

tation of joint motion by placing the patient on a soft diet, and splinting the teeth; (4) intra-articular injection of hydrocortisone acetate, 0.5 cc., in the acute phase, and (5) meniscectomy, if all other types of therapy have failed.

Psychosomatic pain is one of the most important components in all types of pain in this region, and is magnified and perpetuated as long as the patient is maintained in a state of tension. Bruxism may be so persistent as eventually to restrict mandibular movements. Injection of lidocaine hydrochloride into the painful muscle during spasm, and fitting of a prosthetic appliance to be worn at night to prevent contact of the opposing occlusal surfaces, will help, provided the patient's general tension state also is being treated.

The patient whose temporomandibular joint pain is caused by trigeminal neuralgia probably should be treated initially with alcohol block of the peripheral nerve.

Tumors or cysts of the mandible cause both direct and referred pain.

Most patients with temporomandibular joint pain are tense, nervous persons who also have some dental or occlusal disharmony.

A meniscectomy is indicated when there is repeated dislocation of the meniscus with blocking of the condyle, preventing anterior movement.

Sedation or use of tranquilizers in conjunction with the afore-mentioned therapeutic procedures will yield the greatest number of satisfactory results.

Georgiade, Nicholas G. Duke University Medical Center, Durham, N.C. Temporomandibular joint dysfunction and facial pain. *J.N. Carolina D.Soc.* 44: 110-115 Jan. 1961

Anatomy

Bite rehabilitation. Lindblom.420

Biochemistry

Amino acids in saliva. Chakravorti.420

Bone mineralization. McConnell.421

Oncology

Prognostic value of smears. Umiker.421

Mucosal symptoms and signs. Sharp.422

Tumorigenicity of materials. Mitchell.422

Physiology

Velopharyngeal movement. Chambiras.423

Properties of oral mucus. Cragg.423

Salivation in depression. Busfield.424

Histology

Salivary leukocytes. Sharry.424

The crystalline apatite. Scott.425

Amyloids in oral tissues. Letterer.425

Forms of pits and fissures. Nagano.426

Therapeutics

Creation of new drugs. Middleton.426

Pharmaceutical industry. Dowling.427

Sulfisoxazole. Gissa.428

Periodontics

Marginal periodontal disease. Berger.429

Gingival biopsies. Moskow.429

Histogenesis of repair. Wilderman.430

dental research



Anatomy

Clinical bite rehabilitation in 318 patients with arthrosis

Balanced articulation and its importance for the mastication in man have been investigated at the Royal School of Dentistry in Stockholm, Sweden.

The material for this investigation consisted of 318 patients in whom clinical rehabilitation of the bite had been obtained and of 61 subjects used as controls. More than 2,000 roentgenograms of the temporomandibular joint were taken. They were measured for the evaluation of different fossal and condylar parameters, such as breadth and depth of the fossa, height and angulation of the articular tubercle, condylar position and displacements during different degrees of sagittal bite openings.

The effects of the type of bite on masticatory function, the age and sex of the patients and the degree of bilateral asymmetry were considered.

The heads of the subjects were positioned vertically and the Camper's lines horizontally. The roentgen-ray projection was angled 15 degrees against both the frontal and the horizontal planes. The possible roentgenographic errors were thereby decreased to 0.2 mm., the intraindividual measurement errors to 0.6 mm., the interindividual measurement errors to 0.9 mm., and the physiologic (condylar movement) errors to 1.2 mm. in linear determinations.

Studies were made to establish the effect of nonlinear roentgenographic distortion and the distortion of the two lines which form an angle, arising from their varying relation to the central beam. Stereometric procedures were carried out to evaluate the several components of possible roentgenographic errors.

Errors in the estimation of the sagittal structures and movements may be caused by the oblique roentgenographic projection and by the inability to determine the center of the condylar rotation; both factors may produce a presentation of the condylar path about 10 per cent too long and its inclination about 7 degrees too small.

It was possible to demonstrate that the Camper's line displayed no bilateral asymmetry. The

transverse outline of the condyle appeared hyperbolic, its lateral slope about 15 degrees, and its medial slope 21 degrees from the horizontal plane.

Cineroentgenographic and stereoroentgenographic technics were used to evaluate accurately the opening movements of the mandible.

The size of the roentgenographic outline of the fossa varied significantly between individual subjects. The larger the fossa, the larger was its relative depth; the more circular its contour, the more S-shaped its anterior wall. The subjects of the control group exhibited smaller fossae and a less steep anterior wall than the patients after clinical bite rehabilitation and those treated for arthrosis of the temporomandibular joint.

In the experimental group, the average length of the condylar path at an opening movement of the mandible of 2 cm. was 10 mm., its inclination was 33 degrees and the condylar rotation about 10 degrees. When changing from an open to a protrusive position, the mandible rotated forward until approximately the same angular position was attained as in occlusion. This movement could be described as a parallel forward-downward displacement of the mandible.

No significant differences in the anatomic features of the temporomandibular joint existed between the patients with abnormal bites and those with normal bites. The type of bite, therefore, appeared to have no predisposing importance in the development of arthrosis of the temporomandibular joint.

Lindblom, Gösta. Royal School of Dentistry, Hölländergatan 17, Stockholm, Sweden. Anatomy and function of the temporomandibular joint: clinical bite rehabilitation and roentgenographic findings in patients with arthrosis. *Acta odont.scandinav.* Vol. 17, suppl. 28:1-287 1960 [in English]

Biochemistry

Ten free amino acids in human saliva

The data regarding the presence of free amino acids in normal human saliva are controversial. Kleiner (1958) asserted that human saliva does not contain free amino acids, whereas Goldberg

and others (1948) demonstrated the presence of 13 free amino acids in normal human saliva.

The circular paper chromatographic technic was used to separate free amino acids from the saliva of 15 men. The following ten free amino acids were demonstrated to be present in the saliva: cystine, lysine, histidine, arginine, proline, tyrosine, tryptophan, methionine, valine and phenylalanine.

Chakravorti, B. P. Medical College, Baroda, Bombay, India. Free amino acids in normal human saliva. J.Indian M.Prof. 7:3146-3147 June 1960

Relation between inorganic chemistry and biochemistry of bone mineralization

On the basis of an understanding of the inorganic composition and crystal chemistry of tooth and bone minerals, it was predicted: (1) that the carbonate (or bicarbonate) ion is essential to the precipitation of the bone mineral; (2) that the presence of a bacterial flora is not essential to the precipitation, and (3) that some single biochemical substance, such as an enzyme, might catalyze the reaction and thereby govern whether or not mineralization occurs.

In vitro experiments with saliva collected from persons who readily accumulated oral calculus resulted in precipitation of a mineral substance (dahlite or carbonate hydroxyapatite) which is comparable in composition and crystal structure to oral calculus.

Similar mineral substances were produced from synthetic solutions containing sodium phosphate and calcium chloride (in addition to a buffer) in the presence of carbonic anhydrase and available carbon dioxide.

It is concluded that the carbonate ion is essential to the precipitation of bone mineral and that the principal biochemical catalyst in vivo is carbonic anhydrase. Bacteria are not essential to the precipitation, but probably they play a secondary role in connection with the formation of oral calculus, urinary calculus, and so forth.

McConnell, Duncan; Frajola, Walter J., and Deamer, David W. Health Center, Ohio State University, Columbus, Ohio. Relation between inorganic chemistry and biochemistry of bone mineralization. Science 133:281-282 Jan. 27, 1961

Oncology

The prognostic value of smears in the treatment of oral cancer

The diagnostic and prognostic significance of oral smears in 55 patients who received external irradiation for carcinomas of the oral cavity or oropharynx was evaluated. Direct smears were obtained from the surfaces of oral carcinomas (tongue, gingiva, floor of the mouth, anterior tonsillar pillar, retromolar area and hard palate) prior to, during, and after irradiation. Companion smears were taken from the adjacent uninvolved mucosa within the field of irradiation.

Although cell or nuclear enlargement, and cytoplasmic vacuolization or multinucleation are not pathognomonic of radiation effect, the quantitative transformations during treatment were striking. Enlargement of the cells was the earliest, most prominent and most consistent alteration. Cells which exceeded 75 microns in diameter were infrequent in pretreatment smears, whereas during therapy most cells showed some enlargement, often several times their pretreatment size of 35 to 50 microns. Increase in nuclear size was less frequent.

Recognizable cytologic changes usually were distinct by the fifth to seventh day of treatment.

The conversion from type A cells (according to Caspersson and Santesson, those neoplastic cells in the growing and infiltrating or perivascular portions of epithelial cancers) to type B cells (those found in the central, less viable regions of the neoplasm) is a good prognostic sign.

A few of the largest neoplasms maintained dense populations of malignant cells throughout treatment, but this was the exception rather than the rule. In most instances the cancer cells became so sparse during the last two or three weeks of treatment that they became difficult to find. Over 70 per cent of the patients still had positive or suspicious smears after up to 45 days of treatment, almost 50 per cent being unequivocally positive.

Eighteen patients who had positive or suspicious smears at the completion of treatment, eventually had negative smears during the immediate postirradiation period (one to three months).

Smears taken immediately at the conclusion of treatment have relatively little prognostic value, especially if positive, but smears taken within the first three months after completion of treatment are highly significant. Each of 13 patients who had positive smears during the postirradiation phase either had residual neoplasm or developed recurrent neoplasm, and 6 died; only 3 of the 28 patients whose smears were negative during this phase had residual tumor and only 4 of these 28 subsequently developed recurrent neoplasm, and all but 1 of the 28 are alive.

Other conclusions were as follows:

The radiation response of benign squamous cells was not of practical value in prognosticating the clinical results.

Destruction of malignant cells by irradiation appears to be more important than radiation-induced tumor differentiation.

Determination of maturation and cornification indexes are of no practical clinical value.

The presence of malignant cells in oral smears taken at the end of treatment does not preclude irradiation arrest, and many patients showed conversion of positive to negative smears after completion of treatment.

Umiker, William; Lampe, Isadore, and Rapp, Robert. University of Michigan Medical Center, Ann Arbor, Mich. The diagnostic and prognostic value of oral smears in the radiotherapy of carcinoma of the oral cavity and oropharynx. *Am.J.Roentg.* 85:69-77 Jan. 1961

Premonitory mucosal symptoms and signs in 100 patients with oral carcinoma

Premonitory symptoms and signs in 100 patients with oral carcinoma were studied. There were 54 men and 46 women, and the average age was 59.5 years.

Premonitory symptoms of oral carcinoma were described by 81 patients as having existed prior to the onset of carcinoma. The symptoms, in order of frequency, were soreness (reported by 47 patients), dryness (18), burning (9), denture irritation (5) and herpes (2 patients).

The oral epithelium in 87 patients was found to be abnormal, whereas in the remaining 13 patients it was normal. Atrophy was the most common abnormal sign (seen in 74 patients),

followed by leukoplakia (58), fissuring of the tongue (15), and chronic inflammation (58 patients).

The authors' observations indicated that atrophy and leukoplakia are the principal precancerous states, and that when found in combination they are more significant than either one found alone.

Since abnormal mucosal changes rarely are observed singly, the management should be flexible. The following procedures should be considered for most patients: (1) relief of local, physical irritating factors affecting the epithelium; (2) correction of inflammatory conditions, including the infection associated with gingivitis and denture hyperplasia, and (3) correction of nutritional inadequacies. Vitamin deficiencies also require treatment, and occasional improvement has been obtained with the therapeutic use of vitamins B₁, B₆ and B₁₂.

Corrective treatment of the abnormal mucous membranes and especially the determining of the causes of mucosal atrophy may prove the means of preventing oral carcinoma.

Sharp, George S., and Hazlet, John W. Pasadena Tumor Institute, Pasadena, Calif. Premonitory mucosal symptoms and signs of oral carcinoma. *D.Radiog. & Photog.* 33:47-53 Sept. 1960

Tumorigenicity of twelve dental materials

This study was undertaken to determine the tumorigenicity of 12 dental materials. The materials tested were: fused porcelain beads, a silicate cement, an autopolymerizing resin filling material, a denture acrylic resin, zinc oxide-eugenol, calcium hydroxide and methyl cellulose, silver wire, silver amalgam, copper, an alloy of 60 per cent nickel and 40 per cent gallium, and a chrome-cobalt-nickel alloy. The control material used was nickel.

Four subdermal implants of small pellets of one of the 12 materials were placed in each of 120 young adult Wistar rats and observed for up to 27 months.

Five of ten animals receiving implants of nickel developed a sarcoma around one pellet. These were detected after 7, 8, 15, 17 and 23 months.

Nine of ten animals receiving implants of the

nickel-gallium alloy developed sarcomas during the experimental months numbering 7, 8, 8, 8, 10, 11, 12, 13 and 13.

No animals of any other group developed tumors related to the implants.

In future studies, more careful and more frequent observations of the animals should be made during the early weeks after implantation to see that the materials are retained. At the time of death, the presence or absence of the implanted materials should be ascertained.

Mitchell, David F.; Shankwalker, Govind B., and Shazer, Shirley. Indiana University School of Dentistry, Indianapolis, Ind. Determining the tumorigenicity of dental materials. J.D.Res. 39:1023-1028 Sept.-Oct. 1960

Physiology

A radiographic examination of normal velopharyngeal movements

The criterion of a successful rehabilitation program for the patient with cleft palate is the attainment of normal nonnasal speech. Roentgenograms of velopharyngeal movements are useful as a routine aid in the diagnosis, prognosis and treatment planning of postoperative cleft palate speech. Velopharyngeal roentgenography, in conjunction with speech examinations, affords an objective assessment and evaluation of the existing clinical situation prior to the commencement of rehabilitative therapy, and it provides permanent records of growth, development and rehabilitative progress or nonprogress during the course of treatment.

To ascertain normal velopharyngeal movements, lateral head roentgenograms were made of 35 normal subjects with normal nonnasal speech. Radiopaque material (viscous lipiodol in the very young, barium sulfate in older patients) was used to outline the structures. Roentgenograms were made of subjects during prolonged phonation of certain vowels and consonants. Tracings of the roentgenograms were made.

Normal velopharyngeal contact occurs invariably on the posterior pharyngeal wall immedi-

ately opposite the level of the anterior tubercle of the anterior arch of the atlas vertebra. Normal velopharyngeal competence consists of an upward and backward elevation of the soft palate influenced by the respective muscle groups and a concomitant contraction of the superior constrictor of the pharynx and salpingopharyngeus muscle. The two aspects of nasopharyngeal wall response with the achievement of active velopharyngeal competence are as follows: (1) the superior constrictor of the pharynx contracts and remains in a state of contraction during the whole period of active speech production, and (2) the salpingopharyngeus muscle similarly contracts and remains in a state of contraction. The anterior and lateral dimensions of the nasopharynx, therefore, are reduced during speech production to aid in the achievement of velopharyngeal competence.

In children, velopharyngeal contact is achieved at a level well above that of the arch of the atlas vertebra; in adults, it is achieved at a level opposite that of the arch of the atlas vertebra.

Chambiras, Peter G. 135 Alison Road, Randwick, New South Wales, Australia. A radiographic examination of normal velopharyngeal movements. Austral. D.J. 5:356-366 Dec. 1960

Properties of oral mucus

Various environmental factors affecting the properties of oral mucus were investigated at the Dudley Road Hospital in Birmingham, England. The factors studied were: (1) variations in consistency and physical state caused by the action of pathogenic bacteria or polymorphs; (2) relations existing between consistency and fluid content, and (3) characteristic features which might prove relevant for the diagnosis of dental, oral and respiratory diseases.

The results were as follows:

1. Pathogenic bacteria such as *Staphylococcus pyogenes* var. *aureus*, *Diplococcus pneumoniae*, *Escherichia coli*, *Hemophilus influenza* and *Streptococcus faecalis* cause liquefaction of mucus on the second or third day of incubation at 37°C. The presence of polymorphs (polymorphonuclear leukocytes) appears to accelerate the breakdown of mucus caused by bacterial action.

2. Between 40 and 65 per cent of liquid must be removed from mucus before there is an appreciable increase in consistency. The increase in consistency on dehydration is less rapid.

3. Mucus specimens exposed to air saturated with water vapor at 37°C. did not increase in moisture content.

4. Oral mucus has a wide range of fluid content and consistency; the fluid content cannot be increased experimentally after the mucus has been formed, and carbon dioxide does not cause liquefaction *in vitro*.

5. Oral mucus, consisting of water, mucopolysaccharides and mucoprotein, is excreted in excess by the epithelium when it becomes infected. Mucus is probably sterile on formation, but if it is not cleared from the oral cavity and the respiratory tract within 24 hours, it is possible that bacterial action alone or combined with polymorph acceleration will cause lysis.

6. The role of lysed mucus may be twofold in pathologic significance: (1) the greater its mobility, the greater its efficiency as a disseminator of bacterial infection, and (2) the effect of lysis is to denature mucus into a solid and a liquid medium.

Cragg, J., and Smith, S. G. Department of Pathology, Dudley Road Hospital, Birmingham, England. Properties of oral mucus. *Arch.Int.Med.* 107:149-155 Jan. 1961

Salivation in depressed patients

Salivation rates were determined in three groups of subjects: (1) 45 hospitalized patients with depression of varying degrees of severity, (2) 45 hospitalized nondepressed patients, and (3) 50 normal subjects as a control group. Subjects were tested at least one hour after meals and at least one hour before the next meal. Dental rolls—two buccally and one sublingually—were placed in the mouth of each subject, in the manner described by Peck (1959). The dental rolls were left in place for two minutes, manually removed, placed in screw top jars, and weighed.

The depressed patients had the least saliva, normal controls the most, and nondepressed patients somewhere in between. Since depressed patients had less saliva than nondepressed pa-

tients, it should follow that progressive severity of depression should correlate with progressive diminution of salivation, but this was not borne out; there was no correlation of salivation rate with degree of depression.

Those depressed patients who also were schizophrenic produced saliva at a greater rate than depressed patients who were not schizophrenic. There was no difference in salivation rates between schizophrenic and schizoaffective depressed patients.

There was no correlation of salivation rate with sex of the subjects or age of the subjects.

Busfield, Bernard L., Jr., and Wechsler, Henry. Massachusetts Mental Health Center, 74 Fenwood Road, Boston 15, Mass. Studies of salivation in depression. *Arch.Gen.Psychiat.* 4:10-15 Jan. 1961

Histology

Origin of salivary leukocytes

In an effort to localize the area or areas in the mouth in which salivary leukocytes originate, two groups of subjects were examined. The first group consisted of 15 dental nurses ranging in age from 19 to 24 years, the second group of 11 edentulous men and women from 40 to 60 years old.

Scrapings were obtained from the various areas of the mouth in the following manner: a 3 mm. length of a bent, blunted dental explorer was placed against the tissue and five strokes 3 to 5 mm. long were made. The material thus collected was placed in a drop of 0.5 per cent saline on a labeled glass slide, mixed thoroughly, stained with May Grünwald-Giemsa's stain, and a proportional count of leukocytes and epithelial cells made.

In the dental nurse group the areas scraped were the gingival sulcus, buccal gingiva, mucobuccal fold, cheek, palate, floor of mouth and dorsum of the tongue.

Leukocytes constituted an average of 47 per cent of the somatic cells from the gingival sulcus. In the other six areas from which smears were taken, leukocytes averaged not more than 1.6 per cent of the total somatic cells collected.

In the edentulous group, a very small fraction of the total somatic cells from six collecting sites—crest of ridge, mucobuccal fold, cheek, palate, floor of mouth and dorsum of tongue—were leukocytes.

The gingival sulcus provides the major site of entrance of leukocytes into the oral cavity.

Sharry, John J., and Krasse, Bo. Royal Dental School, Malmö S, Sweden. Observations on the origin of salivary leukocytes. *Acta odont.scandinav.* 18:347-358 Nov. 1960 [in English]

The crystalline component of dental enamel

Earlier electron microscopic investigations have demonstrated that the crystalline apatite which is the major component of the mature dental enamel covers a framework of fine organic fibrils. However, there have been difficulties in observing both the organic and inorganic constituents in the same specimen.

Inorganic constituents were observed best in replicas of ground sections or in cleaved fragments, whereas organic constituents could be demonstrated in thin sections of decalcified enamel.

In replicas or pseudoreplicas of untreated or acid-etched specimens, the crystalline components of enamel have appeared flat and ribbon-like in previous investigations, and varying in length from 400 to 10,000 angstroms. Definite and uniform cross-markings at intervals of roughly 300 angstroms have also been reported. This segmented appearance has been of special interest because of the possibility that it might indicate the presence of organic material within the larger crystal-like objects. Evidence that this phenomenon is a fact has now been derived from the examination of pseudoreplicas of enamel from which all organic substance had been removed.

This has been accomplished by treatment of the surfaces of polished ground sections with ethylene diamine in a Soxhlet extractor. A complete extraction cycle took 15 minutes, and the specimens were exposed to from one to six cycles. Identical results were later obtained by immersing the ground section in ethylene diamine at 80°C. for from 15 minutes to 2 hours. After gentle washing and drying in air, positive

collodion-carbon pseudoreplicas were made. The ground sections treated for more than 30 minutes were affected to such a depth that it was often necessary to remove some of the loosened crystalline material by stripping several primary layers in succession before a suitably thin pseudoreplica could be made. The finished replicas were shadowed with tungsten oxide so that the areas that had been photographed could be subjected to limited area electron diffraction.

If the small particles observed are actually crystalline units of enamel, the fibrillar organic matrix must be involved in their arrangement. Because matrix formation precedes calcification, the axial fibrils within the prisms could form a mold in which the crystals increased in size or the nucleation could occur at periodic intervals within the fibrils. The present findings suggest that the remaining intercrystalline spaces are filled with amorphous organic matter.

However, further studies are required before the dimensions of the fundamental crystalline unit of the enamel can be definitely established. Unfortunately, the only positive information derived from roentgen-ray diffraction patterns has been that the mineral present in enamel is apatite and that the crystals are oriented preferentially in an axial direction. Another approach is afforded through electron microscopic examination of sectioned developing enamel. By this means it may be possible to trace the deposition of mineral during the period of calcification.

Scott, David B. National Institute of Dental Research, Bethesda 14, Md. The crystalline component of dental enamel. *Proc.Intern.Congr.Electronmicrosc.* 11:348-351 Sept. 1960

Electronmicroscopic and immunomorphologic studies of amyloids in oral tissues

Amyloid, a complex protein deposited in oral tissues, was investigated electronmicroscopically and immunomorphologically at the Pathological Institute of the University of Tübingen, Germany.

Previously, it was assumed that these protein deposits are characterized by their hyaline structureless nature and were caused by degeneration of the involved tissues or by their infiltration by

undetermined substances. Under the electron-microscope, however, it was established that amyloids are made up of small fibers showing no hyaline homogeneity. In experimentally produced amyloidosis (in mice and man), amyloid degeneration of oral tissues is associated with an amyloid formation in the facial skin, characterized by eruption of nodules, papules and plaques and by specific pigmentation. In the involved region, a profound increase in plasma cells was observed. These plasma cells contain a white insoluble protein substance, archiplasm tubes filled with antibodies. As amyloidosis progresses, the cytoplasm escape into the tissue spaces immediately surrounding the cells where they are precipitated as fibrillar amyloid deposits.

Fluorescent anti-complementary serum makes it possible to detect within the amyloid deposits the antigen-antibody complexes which, under specific circumstances may be identified in the plasma cells and the megakaryocytes (the giant cells of the marrow of bone) before the amyloid deposits become observable.

Letterer, Erich; Caesar, Rudolf, and Vogt, Arnold. Pathologisches Institut, Universität Tübingen, Liebermeisterstrasse 8, Tübingen, Germany. Electronmicroscopic and immunomorphologic studies of amyloids in oral tissues. *Deut.med.Wschr.* 85:1909-1910 Oct. 28, 1960

The form of pit and fissure and the primary lesion of caries

To clarify the relation between the forms of the pits and fissures on the occlusal surfaces of teeth and the primary lesion of caries, 268 ground sections of human teeth were studied.

Pits and fissures can be classified into the following forms:

1. V-type: wide at the top and gradually narrowing towards the bottom.
2. U-type: almost the same width from top to bottom.
3. I-type: an extremely narrow slit.
4. IK-type: Extremely narrow slit associated with a large space at the bottom.
5. Other types.

The various forms of pits and fissures were found in the following percentages: V-type, 34 per cent; IK-type, 26 per cent; I-type, 19 per cent; U-type, 14 per cent, and others, 7 per cent.

The form and the depth of pits and fissures are closely related. For instance, the V-type pit and fissure is shallow, the U-type is of medium depth, and most of the remaining types of pits and fissures are deep.

Generally, the primary lesion of caries starts at the top of the pits and fissures more often than at other levels.

The primary lesion of caries is closely related to the form and depth of the pits and fissures. That is, caries starts from the bottom in the V-type pit and fissure, halfway down in the U-type, and from the top in the I-type and IK-type. In the shallow pit, caries starts from the bottom; in the deep pit, from the top.

Nagano, Toshiro. Tokyo Dental College, No. 17, Kanda-Misaki-cho, Chiyodaku, Tokyo, Japan. Relation between the form of pit and fissure and the primary lesion of caries. *Shikwa Gakuho* 60:80-90 Sept. 1960

Therapeutics

How new drugs are created and evaluated

The therapeutic properties of plants emerge as a continuous thread of consuming interest through the years. Undoubtedly, the observation of the effects of the ingestion of various elements of the indigenous plants by domestic and wild animals led to their trial by man from the earliest times. Quinine, the alkaloid from the cinchona bark, made its entry into the medical armamentarium through empirical practice.

From Hippocratic precepts, two principles have served as excellent brakes on uncontrolled therapeutic enthusiasm. The natural evolution of a disease must be observed and recorded before any amendment can be attributed to a remedy. The second Hippocratic principle in therapy reads, "If you can do no good, at least do no harm."

With the application of physiologic technics in the nineteenth century, adjusted and refined to

the requirements of pharmacodynamics and pharmacology, has come sustained growth in the dignity and stature of modern therapeutics.

The birth of a new drug is an involved process. In the past, when empiricism prevailed, chance dominated the picture. A disease entity, a symptom or a symptom complex was the target, as it will continue to be in all therapeutic challenges of the future. The simple application of the rules of analogy is now replaced by sound chemical and pharmacologic experimentation. The chemical structure of the agent to be tested is known. Synthesis and realignment of the constituents of new drugs of promise may be projected. From such structural readjustments, unanticipated therapeutic dividends may be reaped.

From the study of the relation of spoiled sweet clover to profound hemorrhagic tendencies in cattle came the isolation of bishydroxycoumarin.

A new drug under study must withstand the most critical scrutiny before it is deemed worthy of human clinical trial. From its chemical constitution the action will have been predicted. Every pharmacodynamic and pharmacologic test that can be conceived to be pertinent to its therapeutic availability is performed to establish these actions, good and bad, beyond any equivocation. Various animals, birds and reptiles are used in these pharmacologic studies. One of the most interesting controls in the recent literature has been the use of the Siamese fighting fish to study the effect of tranquilizing drugs.

The action, locus of action, mechanism of action and the favorable and unfavorable effects of the drug are established in experimental animals. The properties of the agent are ascertained and the route of administration decided by a number of factors. Particular attention will be directed to all toxic manifestations in the experimental animals. Their range and gravity will in large measure determine the availability of the test drug for human therapy. The minimum lethal dose must have a sufficiently wide spread above the therapeutic range to insure safety in the next step of human trial. Frequently, the laboratory workers exhibit appropriate confidence and faith in their own results by submitting themselves to the first trials of the test drugs.

The details of laboratory tests and initial human trial having been fulfilled, the introduction

of new drugs to the medical profession becomes the next important step. Increasingly, the pharmaceutical houses have usurped the role of graduate instruction in therapeutics, albeit in a slanted vein. However, it must be admitted that, regardless of motivation, they make a creditable job of it. They should, since they spare neither money nor effort in enlisting the highest technical and professional support. The fact remains that medical education and organized medicine should not abrogate their responsibilities in this area.

In justice to all involved, the physician must maintain a critical attitude toward the newcomers in the field of therapeutics. He must weigh glowing claims for a new preparation against his personal experience with proved agents having similar indications.

In spite of the carefully conceived efforts and the native conservatism of physicians, innate optimism toward new remedies is unabated.

With the evolution of newer drugs, their potentiality for ill as well as for good becomes increasingly evident. A series of iatrogenic disorders has accompanied the use of penicillin and other antimicrobial agents.

Drug therapy of human diseases has advanced immeasurably in the past 50 years. In certain areas it has paced medical progress. The application of sound basic principles in the study and the evaluation of new drugs has assured their success at the same time that safety in their use is afforded.

Middleton, William S. Department of Medicine and Surgery, Veterans Administration, Washington, D.C. A new drug is born. J.A.M.A. 174:398-403 Sept. 24, 1960

The pharmaceutical industry and the doctor

Criticisms directed toward pharmaceutical manufacturers have fallen into two categories: prices of drugs are too high, and the high-pressure promotion of drugs is unnecessary, expensive and may be harmful in that it may induce the practitioner to prescribe an unsuitable drug.

New drugs are the products of research; continued research requires capital and there is substance in the drug industry's claim that such capital can come only from profits. If such profits

were not forthcoming, the alternative would be for the federal government to finance the research abandoned by the pharmaceutical industry. This would not be in the best interests of the country, because research projects should not be initiated from a single source.

The intense competition that prevails in the pharmaceutical industry should be shifted from the present focus on slight modifications of existing drugs to the discovery of new drugs. To bring information about new drugs to physicians and dentists requires obtaining more and better knowledge by improved clinical testing, clearing the channels of misleading information, and widening the channels so as to bring more accurate information to practitioners. To accomplish these objectives the following suggestions are offered:

1. A single trade-mark should be allotted to a drug.
2. Holders of the patent on a drug should be required to license others to manufacture and distribute it for a reasonable royalty.
3. The patent laws regarding drugs should be made more stringent, so that the superiority of a new drug over drugs already patented would have to be proved before a new patent was issued.
4. The Food and Drug Administration should be empowered to determine the efficacy as well as the toxicity of drugs.
5. A council and panel of experts should be set up to advise the Food and Drug Administration.
6. Appropriations to the Food and Drug Administration should be increased for the aforementioned purposes and also to provide for better control of the standards of quality of drugs and contracts for the independent testing of drugs by outside agencies.
7. If advertising of drugs is not brought under better control by the pharmaceutical manufacturers in cooperation with the medical and dental professions and pharmacists, legislation should be enacted for stricter federal control of the advertising of drugs.
8. The same size of type should be required for the nonproprietary name and trade name in the label and the circular accompanying the package, and in advertising mailed to physicians and dentists. This simple measure would help educate

the practitioner in the proper names of the drugs he uses and could pave the way for dental and medical editors to establish the same requirements in pharmaceutical advertisements.

The pharmaceutical industry, the medical and dental professions, editors of professional journals, retail druggists and others directly concerned, should get together and agree on a code of ethics to be used in pharmaceutical advertising.

Dowling, Harry F. University of Illinois College of Medicine, Chicago, Ill. The pharmaceutical industry and the doctor. *New England J. Med.* 264:75-79 Jan. 21, 1961

Sulfisoxazole in the treatment of oral infections and inflammations

A wide variety of antibiotics and sulfonamides is available for the treatment of dental patients. Many such drugs have been prepared, and new anti-infective agents are being reported at frequent intervals.

Among the sulfonamides, sulfisoxazole (Cantrisin), N-(3,4-dimethyl-5-isoxazolyl) sulfanilamide, has been proved clinically and experimentally to possess definite advantages over other anti-infective drugs. It showed a more rapid absorption, a higher bactericidal and bacteriostatic effect on gram-positive and gram-negative microorganisms, and a greater tolerability (no damage to kidneys, urinary tract and bone marrow).

An investigation designed to establish the therapeutic effect of sulfisoxazole in dental practice was carried out at the Dental School of the University of Bonn.

Sulfisoxazole, 4 Gm. initially, and then 1 Gm. every four hours, was administered in tablet form to 174 dental patients. There were 35 patients with acute inflammations of the jaws; 17 patients with disturbed tooth eruption; 17 patients with extreme postextraction pain; 12 patients with acute inflammations of the oral mucosa or periodontal tissues; 78 patients were going to have tooth extractions which might be difficult, and 15 patients were going to have oral surgical interventions.

The administration of sulfisoxazole prior to tooth extraction prevented bacteremia in 100 per

cent of patients, whereas in 35.5 per cent of patients not receiving this drug, bacteremia developed.

There were hardly any side effects experienced; if they occurred they were comparatively mild (fatigue, hot flush, allergic reactions or nausea).

In 12 patients with periodontal disease (mainly ulcerative gingivitis), the inflammatory symptoms decreased significantly 24 hours after administration of sulfisoxazole. The use of this drug prior to oral surgical interventions (15 patients) prevented postoperative infection and promoted uneventful healing of the surgical wounds.

Gissa, Adolf. Waldparkstrasse 38, Ottobrunn/Munich, Germany. Chemotherapy in dental practice: sulfisoxazole in treatment of oral infections and inflammations. *Deut.zahnärztl.Zschr.* 15:1346-1347 Oct. 1, 1960

Periodontics

Inflammatory marginal periodontal disease: microbiologic studies

In the majority of patients with inflammatory marginal periodontal disease, treated at the clinic of the Dental School of the University of Hamburg, a characteristic microflora of the oral cavity was determined. To trace the infectious origin of this disease, the staffs of the Dental School and of the Bacteriologic Institute of the university have carried out a series of microbiologic investigations; the results were as follows:

1. Tests carried out with pure bacterial colonies established that certain species found in the oral flora of patients with marginal periodontitis exhibited an independent but comparatively moderate pathogenicity. Isolated strains of these specific bacterial species, however, appear to be unable to produce the typical symptoms of the disease.

2. By an artificial recombination of pure colonies of at least four specific bacterial strains (which obviously were involved in the symbiosis), it was possible to produce experimentally the symptoms of the disease. Unexpectedly, however, neither fusobacteria nor spirochetes participated in the pathogenic activity.

3. Decisive for the bacterial pathogenicity seems to be the relationship existing between four specific strains and the catalytic activity of enzymes, especially collagenase and hyaluronidase.

4. Collagenase and hyaluronidase attack the amorphous and fibrous parts (fibroblasts, fibroglia, collagen fibrils and elastic fibrils) of the cementum, pericementum, alveolus and gingiva.

5. Although hyaluronidase, produced by a variety of pathogenic anaerobes, has been determined previously in the saliva and gingival tissue of patients with inflammatory marginal periodontal disease (especially marginal periodontitis), the presence of collagenase in the oral cavity of such patients was demonstrated in this investigation for the first time.

Macdonald and Gibbons (1960) have presented conclusive evidence that the protease activity of specific members of the human oral flora (especially *Bacteroides melaninogenicus*) produces collagenase which catalyzes the destruction of collagen. This finding was confirmed by the present investigation.

The following conclusions were drawn:

1. The presence of collagenase and hyaluronidase (and possibly of other enzymes) in the oral cavity, and the existence of four specific microbial species in the same region are always associated with the development of inflammatory marginal periodontal disease.

2. Based on the specific ecologic conditions of the oral cavity, "fusospirochetal" symbiosis must be considered as an etiologic factor in the development of inflammatory marginal periodontal disease in man.

Berger, Ulrich. Martinstrasse 52, Hamburg 20, Germany. Inflammatory marginal periodontal disease: microbiologic studies. *Zahnärztl.Praxis* 11:217-220 Oct. 1, 1960

Calcifications in gingival biopsies

Histologic examination of gingival biopsy tissues taken at various intervals of time after instrumentation of the gingival sulcus demonstrated an unusual amount of calcified material present in the gingival corium of the specimens. A further survey of these histologic sections was under-

taken to study the nature of the calcific deposits and investigate their origin.

The histologic sections obtained directly after the scaling operation often displayed splits or tears in the sulcular wall, which occurred as a result of instrumentation. Where gingival inflammation was more acute, the damage to the pocket wall usually was more extensive. The traumatized area usually was filled with coagulated blood and debris. Fragments of cementum, debrided epithelium, calculus, bacteria and particles of filling material were found adhering to the crevicular surface. Not infrequently this material had gathered in the epithelial splits and penetrated into the deeper portion of the injured gingival tissue.

Most of the foreign material observed in gingival tissue appeared to be well-encapsulated with little inflammatory response to the particles in the connective tissue. Some of the masses, however, showed a distinct foreign-body reaction to them. Some of the gingival material examined in this study was obtained several months after instrumentation, and still contained excessive amounts of calcified material.

Thorough irrigation of the gingival sulcus after instrumentation probably will rid the area of foreign material that is superficially placed. Tooth particles or calculus already imbedded in deep splits in the pocket wall probably will be more difficult to eliminate. Use of adequate suction during any operation on gingival tissue is recommended.

Moskow, Bernard S. Fairleigh Dickinson University, Teaneck, N.J. Calcifications in gingival biopsies. *D.Progress* 1:30-35 Oct. 1960

Histogenesis of repair after mucogingival surgery

To clarify the mechanism of wound healing after baring of the alveolar crest and vestibular bone, surgical wounds simulating those produced by mucogingival surgery were created in ten young dogs. The animals were sacrificed at specific post-surgical periods and the healing process studied

histologically. The following conclusions were reached:

1. The repair of the wounds was complicated by a necrosis of the superficial layer of exposed bone. This was succeeded by an undermining resorption and finally, 2 to 14 days postoperatively, by complete loss of the exposed vestibular bone.

2. The most significant finding was the source and rate of the proliferating new connective tissue. Two days postoperatively, the fixed connective tissue of the cut dentogingival junction and the periodontal ligament, the incised gingival papillae and the lateral wound edges were the sources of the initial granulation tissue. At six days—after resorption of the vestibular plate—the granulation tissue from the marrow spaces and periodontal ligament fused with the initial granulations from the fixed wound edges to cover the defect. Finally, there was a junction of these rapidly growing tissues with the alveolar mucosa.

3. New bone formation was most intense between the twenty-first and twenty-eighth post-operative day.

4. The oral mucosa regenerated completely in the interdental area. In the radicular area of the wound, the dentogingival junction exhibited a functional repair with an anatomical deformity. Only half of the bone was rebuilt at this site.

5. The epithelial attachment occupied a more apical position in the experimental animals than in the controls.

6. The wound was covered by a new connective tissue within 14 days, and by epithelium in 21 days.

7. Maturation and functional orientation of the involved tissues extended over a six-month period.

Wilderman, Malbern N.; Wentz, Frank M., and Orban, Balint J. School of Dentistry, Loyola University, New Orleans, La. Histogenesis of repair after mucogingival surgery. *J.Periodont.* 31:283-299 Sept. 1960

Dentistry around the world

England's school dental service.....	432
Dentists Register in England.....	432
Tolstoi's view of medicine. Schaffgotsch....	433
Health insurance in Austria. Fellingner.....	434
Tasmanian dental mechanics. Johnston....	434
W. K. Kellogg Foundation report.....	435
Mission work in Africa. Rowberg.....	436
German pharmaceutical industry. Gerhardt.	437
Dental technicians in England.....	438

Artificial respiration

Emergency airway. Nicholas.....	438
---------------------------------	-----

Practice administration

Is there a shortage of dentists?.....	440
The little black book. Thomason.....	441

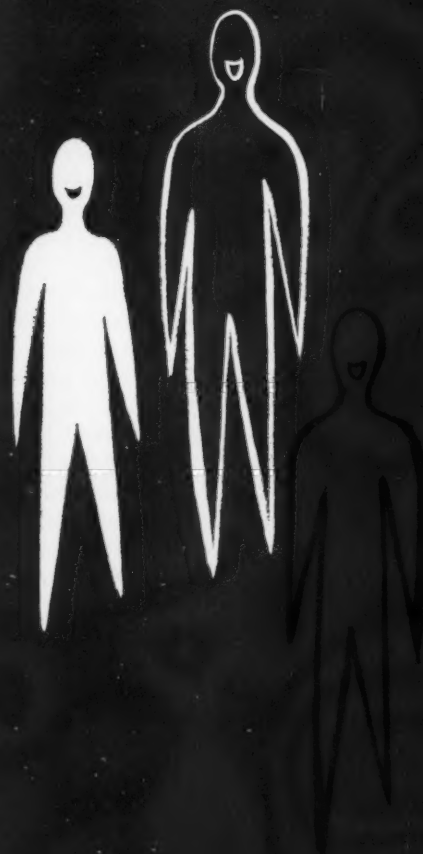
History

The value of history. Strömngren.....	442
Dental anecdotes. Holthamp.....	443

Miscellaneous

Truths and half-truths. Laufman.....	443
--------------------------------------	-----

general



Dentistry around the world

School dental service in England

In England, only 2 per cent of children leave school dentally fit, and a third of the adult population wear dentures. Parfitt (1960) reports that "dental decay among children is probably the only thing apart from lung cancer that is steadily winning the battle against modern science."

Two factors aggravate the situation: the public apathy toward matters of dental health and the failure of recruitment to the dental profession to keep pace with retirements. These two factors are to some extent interdependent, since the gradually decreasing and aging profession, however willing, cannot carry out dental health programs on a sufficiently large scale.

There are more aspirants to dentistry than there are places in the dental schools. Plans have been made to enlarge existing schools and to build new ones, but years will elapse before these measures can have much effect on the number of dentists in practice. Even if more dentists were available it is unlikely that the school dental service—a vital part of any program for better dental health—would derive much benefit.

The president of the British Dental Association has asserted that at present the dental welfare and treatment of children is a "national scandal." The provision for dental treatment is less adequate than it was ten years ago. An efficient school dental service, able to make annual school inspections and to provide full and prompt treatment, requires a ratio of one dentist for every 3,000 children. At present the ratio varies from 1:4,000 in a few areas to 1:14,000 in less attractive parts of the country.

No effective steps have been taken to deal with a worsening situation. The government plan for training 60 dental auxiliaries every two years, although a move (and a controversial one) in the right direction, can be no more than a token offering at present.

Part of the large sums of money now expended on a comprehensive dental service should be diverted to the school dental service to provide more generous salaries, in order to attract more

young men and young women to take up this work as a career. More funds are needed, too, for the support of national dental health campaigns. An efficient school dental service would inevitably and fairly quickly reduce the dental demands made on the National Health Service, and reduce the number of adult "dental cripples."

7 Adam Street, Adelphi, London W.C.2, England.
The school dental service. *Lancet* No. 7146-358
Aug. 13, 1960

The [Dentists] Register

The *Dentists Register* for 1960 contains the names of 77 fewer dentists than were listed at the end of 1957. The Register is published by the General Dental Council in London.

In 1922, 12,762 dentists were registered, of whom 6,723 had registered under the Act of 1921 which prohibited unregistered dental practice, and about 950 had registered under the Act of 1878; the remainder had college and university qualifications.

In recent years, the following numbers of dentists have registered: 1948, 14,904; 1953, 15,549, and 1958, 15,922. In addition, there are now nearly 900 dentists with Commonwealth or foreign qualifications, as against 89 in 1922. This leaves the present Register with 13,265 names having college or university qualifications obtained in Great Britain, against 4,750 in 1921. The yearly rate of increase has varied, the average being 75 a year.

The McNair Committee, whose report was published in 1956, asserted that a Register of at least 20,000 was necessary. It is obvious that at the current rate of increase, the target of the McNair Committee is not likely to be reached this century. The dental schools have done all that could be asked of them, and the directors and their teaching staffs have spared no effort to meet all the demands that their overcrowded schools have permitted. Also, when dental recruitment was at a low ebb, the British Dental Association was largely responsible for improving recruitment. At present, the dental schools have many more applications than they can accept. The urgent need is for more schools, and more places in some of the existing schools.

The new medical teaching center in Wales will contain a dental hospital and school, but not until 1970 will the first graduate have his name inscribed on the Register. The Government has shown little energy so far in improving the availability of dental service or safeguarding the future provision of it. The demand for dental treatment in the National Health Service is becoming greater each year, and the 1960 Register underlines once more the paramount need for increased facilities for the training of dentists.

Editorial. 13 Hill Street, London W.1, England.
The Register. Brit.D.J. 108:379-380 June 7, 1960

Tolstoi's attitude to medicine

The uncompromising statements made by Count Leo Nikolavich Tolstoi (1828-1910) on medicine, dentistry and things concerned with the healing arts are of interest. They reveal not only the prejudices and judgments of a gifted mind but they also reflect a typical attitude toward science and scientists which was held by millions of Russians at that time.

In his diaries, he wrote: "It is strange how little one pays for indispensable and good things such as bread, fruit, glass and iron while spending so absurdly much money on the unnecessary and often actually harmful work as carried out by lawyers, physicians and dentists. Bread, glass and iron are things every man needs, and it should one day be possible to achieve that there is enough for everybody. Law, art, medicine and dentistry are accessible only to a dwindling number of rich people, none of whom really has any need of them. This explains the failure of all attempts to render law, art and the healing arts in their present form acceptable to the people. Their function would have to be given a completely different form before they could become indispensable to the masses.

"Medicine and dentistry, as practiced today, do scarcely more good than harm. The first need for them, if they are to serve a useful purpose and not do harm, is to learn how they can be placed in the services of the masses.

"The belief in physicians and dentists—more especially, the belief in one particular doctor and no other (although all of them are concerned

with one and the same pseudo science)—is on the same plane as the belief in magicians, prophets and faith healers. Even the most experienced and most reasonable physicians and dentists invariably allow themselves to be influenced by the assumption that people need their help, begin to believe that they really can cure, and finish by persuading themselves and others that they know what, in fact, they do not know.

"No other sphere demonstrates the falsity of our social order better than the healing arts. Because medicine and dentistry are largely concerned with treating the wealthy persons, they work with methods which can be applied only within this wealthy milieu. For patients from the broad mass of the people, medicine and dentistry are powerless to help. Today, there exists a strange but widespread belief that the healing arts have developed a means of alleviating pain and combating disease, even death. However, suffering can be alleviated and life can be saved in a thousand different ways without resorting to medicine or dentistry.

"I would abandon my faith in God and in ethics and would have no wish to live longer, if I were obliged to believe that rich people had been preserved for this life because they were able to pay a fee of about ten thousand rubles, whereas poor people had to suffer and to die because they did not have the ten thousand rubles."

I. I. Mechnikov, Tolstoi's biographer, reported in his book *A Day With Tolstoi in Yasnaya Polyana*: "Tolstoi ate only food that had been especially prepared for him—eggs, milk and a vegetarian diet. At the end of the meal, he drank a little white wine mixed with water.

"Priests and doctors," he said, "accuse me wrongly of being an enemy of religion and science. These accusations are completely unjustified. I am a man of profound faith; but I oppose the Church and the way in which it distorts true religion. The same applies to the so-called healing arts and most of the so-called sciences. I am a great admirer of true science—the science which is concerned with man, his happiness and destiny. However, I am an enemy of the false sciences which imagine that they have already accomplished something unusually important and useful for mankind—true science and true religion can get along very well together.

"Life is not formed without common sense, let alone in opposition to common sense."

One may safely predict that mankind, in its search for the truth, will not follow Tolstoi's footsteps in misjudging medicine and dentistry. Ultimately, man will free himself from those contradictions in which Tolstoi found himself entangled. Medicine and dentistry are not pseudo sciences but true sciences which—to quote Tolstoi—are concerned with man, his happiness, health and his destiny.

Schaffgotsch, Xaver Count. Seltzergasse 6, Vienna 1, Austria. Tolstoi's attitude to medicine. CIBA Symp. 8:184-192 Oct.-Dec. 1960

Social health insurance in Austria

In Austria, the government controlled Public Health Insurances (Krankenkassen) cover approximately 95 per cent of the country's population.

At present, the payments made for health services are as follows: 20 per cent for physicians' fees, 16 per cent for hospital expenses, 16 per cent for drugs and nursing supplements, 6 per cent for dental treatment, 20 per cent for support of sick persons incapable of work, 4.6 per cent for maternity aid, and 7.5 per cent for administration.

Despite the comparatively high percentage reserved for physicians' fees, the actual payment to doctors (physicians and dentists) is inadequate. The average income of a medical or dental practitioner is at about the same level as that of a 40 year old employee of the post office.

The relationship between physicians or dentists and patients is influenced by the socialized health schemes which determine how the practitioner ought to be paid, and control the drugs he may prescribe. Patients have learned to demand specific services, a factor that has changed the previously harmonious doctor-patient relationship to an unfavorable one in which neither feels the same responsibility toward the other.

Patients who urgently need complicated care are at times deprived of the required specific service because the practitioner may be reluctant to recommend a time-consuming course of treatment when no additional payment can be expected for such a special service. All practitioners

are burdened with an extremely heavy load of patients.

An important benefit of the system, however, is the complete freedom the patient has from any financial pressure during and after treatment. Medical and dental services, drugs, hospital care and nursing service are provided with no financial burden. The pressure to keep the costs under control, however, discourages the practitioners from providing an expensive service such as roentgenographic diagnosis.

The practitioners are in danger of gradually becoming employees not only of the social health insurances but also of the patients. Accordingly, they lose their authority and their singular position of being reliable friends and counselors of the patients.

The solution to the problems of social health programs must lie somewhere between the present system and that of free medical and dental practice, that is, in a program which frees the patients through certain stipulated arrangements from overwhelming financial burdens but which does not impede the freedom of the medical and dental professions or destroy the favorable relationship between practitioners and patients.

Fellinger, Karl. Second Medical Clinic of the University of Vienna, Vienna 9, Austria. Problems of social health insurance in Austria. New York State J. Med. 60:1936-1941 June 15, 1960

Dental mechanics in Tasmania

Through legislative action in Tasmania in 1957, the dental mechanic now is permitted to deal directly with the public. Already there are indications that there is insufficient work available to keep fully occupied those "registered dental mechanics" conducting practices. As their activities are not supervised or policed, no doubt the mechanics will be requesting the removal of restrictions. The original intention, as in New South Wales, was that mechanics granted chairside status would work only in edentulous mouths whose status had been certified by a registered dentist. Already, this limitation has been removed. It is incredible that any government which supposedly has the welfare of the people at heart should yield, against the advice of independent

authorities, to a small group working for its own end.

The effect of the Tasmanian legislation has been to raise to legal status the erstwhile illegal operator. The members of the public who were promised dentures at half the fee charged by dentists have been duped and are the ultimate losers. Members of the Australian Dental Association rarely, if ever, are requested to sign certificates.

Most private dental practitioners in Tasmania would not agree that the position has arisen as a result of economic pressure. The situation arose after the Dentists' Act (1919-1920) when certain persons were precluded from registration and became known as "unregistered dentists." In spite of prosecutions by the Dental Board, they continued to practice and in some instances passed on their limited knowledge to successors whom they trained as dental mechanics.

Over the years, propaganda has been disseminated that dentures are inevitable, that dentists extract teeth and that dental mechanics are the people who make the dentures. For young dental graduates who have been restricted by their ethics from countering this propaganda, it has been difficult to urge the advantages of preventive and conservative dentistry. Perhaps the dental profession has been remiss in not educating the public that dental expenses are inevitable in a civilized community and that they should form part of the family budget as do other necessities.

Johnston, A. D. 100 Tamar Street, Launceston, Tasmania, Australia. Dental mechanics. Austral.D.J. 5:378 Dec. 1960

W. K. Kellogg Foundation

Of the \$7,990,291 expended by the W. K. Kellogg Foundation, Battle Creek, Mich., in the fiscal year 1960, \$319,334 was appropriated for dentistry, of which \$17,554 was spent in Canada, \$133,615 in Latin America and \$168,165 in the United States.

In Canada in the fiscal year 1960, \$528 was paid the Canadian Dental Association to assist the Council on Dental Education to develop a program of accreditation and consultation services for Canadian dental schools; \$17,026 was paid Dalhousie University, Halifax, Nova Scotia,

to assist in strengthening the teaching program of the Faculty of Dentistry and to encourage the development of regional planning and support for dental education by the Maritime Provinces.

In Latin America in the fiscal year 1960, the following sums were paid: \$5,801 to the Brazilian Dental Education Association for postgraduate courses for faculty members of Brazilian dental schools; \$14,982 to the National University of Colombia, to provide equipment, visiting professors and salary supplements; \$10,634 to the University of Antioquia, Colombia, to provide equipment and visiting professors to improve the Dental School; \$8,126 to strengthen the teaching program at the University of Chile; \$12,246 to aid the dental school of the University of Costa Rica; \$36,600 to provide equipment for a children's clinic and for audiovisual training at the University of San Carlos, Guatemala, and \$5,698 to the University of São Paulo, Brazil, to train dentists in public health and preventive dentistry. Fellowships were provided a number of selected faculty members to obtain specialized preparation in the United States, as part of a program to improve dental education.

In the United States in the fiscal year, the following sums were paid: \$21,000 to aid the American Association of Dental Schools in establishing a central office; \$30,000 to the American Council on Education to complete the Survey of Dentistry; \$4,774 to the educational trust of the American Dental Hygienists' Association to assist in developing a nationwide achievement testing program for students and graduates of schools of dental hygiene; \$30,435 to the New York University to assist in developing experimental educational programs for training dental teachers; \$25,000 to the Loyola University (New Orleans) and \$50,956 to the University of Rhode Island, to aid in establishing new programs for training dental hygienists, and \$6,000 to the Michigan Health Council to help establish a program for placing new dental practitioners where needed in Michigan communities.

In addition to its expenditures to aid dentistry in this hemisphere, the W. K. Kellogg Foundation made the following expenditures in the fiscal year 1960: agriculture, \$1,151,863; education, \$3,712,649; hospitals, \$583,423; medicine, \$837,678; nursing, \$460,671; public health, \$230,163,

and general, \$649,510. All such expenditures were for projects in this hemisphere, except for \$45,072 granted hospitals in Australia, and \$627,259 expended to aid agriculture in Europe.

W. K. Kellogg Foundation, Battle Creek, Mich. W. K. Kellogg Foundation. Annual report for 1960 1-170 Jan. 1961

Medical and dental mission work in Africa

In the last few years it has become as popular to visit a health mission in Africa as to interview Khrushchev. In almost every class of dental and medical schools there are several idealistic students who plan to become health missionaries. The motivation for such an undertaking consists in a strong belief that the command of the Gospel to heal is meant for health missionaries as well as for dentists and physicians practicing in their home countries. Some who do not go overseas may feel this "call" and do an excellent job in their communities. Working at an African mission, however, requires several additional motives such as the desire to travel, to broaden personal viewpoints and to experience adventures and extreme satisfaction.

There is no doubt that a young dentist or physician can serve the good of humanity in the suburbs of New York, in the rural communities of Minnesota as well as in the center of Africa. The only difference is that the health missionary must be willing to live in relatively primitive conditions and adjust himself to them, and he must be able to enjoy most of it.

In an African health mission, however, it is almost impossible to be both minister and practitioner. If he attempts to be both, he will be neither. Either task is a full-time job.

A brief description of the structure of an African mission is helpful to an understanding of the place of the health worker in such a set-up. There are two concentric circles, the smaller having a radius of approximately one-fourth of that of the larger one. Through these concentric circles, a horizontal and a vertical line are drawn which divide the circles into quadrants. The inner circle may be labeled "Gospel"; the quadrants are labeled as follows: (1) evangelism, (2) general

education, (3) industrial arts, and (4) healing arts. The general mission effort, therefore, is Gospel-centered and the four major efforts are simultaneously centered in the mission work.

The health portion of the endeavor of an African mission is divided into three stages. The first stage is concerned primarily with gaining the confidence of the native populace and with studying the disease patterns of the local area. The young health missionary must learn to understand what native medicines are used and something about the toxicology of the native remedies. Once the confidence of the native populace has been obtained, the second stage begins. The population must be sifted for persons able and willing to serve as members of the subordinate staff. After a short time, the administration of medicines, injections and some screening of outpatients can be consigned to them. This training involves considerable time and requires that approximately half of the time of the personnel of the health mission will be spent in teaching and training. Once the subordinate staff is sufficiently trained to make the records reasonably accurate and can take part of the load from dentists and physicians, the third stage of the mission health work has been reached—that of the teaching institution.

Teaching should be the final goal of any mission effort. The missionary medical and dental staff will spend about 85 per cent of its time in teaching, and the other 15 per cent in treating patients with more complicated conditions. Initiation of a research program within the limits imposed by the local situation always raises the standards of medical and dental care. The education of selected natives to a higher level is the prime task of the mission's leading physician or dentist. The language used in this education must be such that the native students are able to read in the international medical and dental literature. "Medical assistant" or "dental assistant" are the titles persons with this type of training receive throughout the African continent. A danger in this type of training is that the individual trainee may not understand that his abilities are still inadequate to accomplish a certain task. It is, therefore, important to instruct him in his limitations as well as in his capabilities.

In the fourth stage of the mission's health endeavor, the management of the clinics is gradually

turned over to the trained personnel. These workers learn to manage the drug room, admission desk, the hospital wards, and finally the finances and policy-making of the entire mission. At its final stage, the health mission is run by nationals who may employ foreign trained help and eventually receive a grant of financial aid from the mission. These persons are very intelligent and legitimately desire and should have equality with the "whites."

In the African missions, there are many physicians and dentists who work hard against tremendous odds to maintain the standards of treatment consistent with the conscience of 1960. The main object of an African health mission is to recognize that it must progress if it is going to witness the dental and medical services performed in a commendable way.

Rowberg, Raymond G. 9822 East Spregua Avenue, Spokane 63, Wash. Medical and dental mission work in Africa. *A.M.A.Arch.Int.Med.* 106:591-595 Nov. 1960

Pharmaceutical industry in Germany

Friedrich Wilhelm Adam Serturmer (1783-1841), a young German chemist, could hardly have been aware of the significance of his first article published in the *Journal de Pharmacie* in 1806. He announced a new discovery under the title "Analysis of pure meconic acid in a chemical investigation of opium," in which he called the white crystalline drug "principium somniferum." Later, he changed this term to "morphium" (morphine) after Morpheus, the Greek god of sleep. Serturmer recognized that his isolation of morphine paved the way to the identification of an entire new range of compounds which he called "plant alkalis." Today, they are known as "alkaloids," and include strychnine, discovered in 1817, caffeine (1819), solamine (1821), quinine (1827), and many others. The term is also applied to synthetic substances which have structures similar to plant alkaloids. The discoveries of the alkaloids were milestones in the growth of the German pharmaceutical industry.

At about the same time, Emmanuel Merck (1794-1855), a German pharmacist, offered a series of new drugs wholesale "in order that they

may be brought to the public notice, and especially to enable physicians and dentists to conduct experiments inexpensively with these drugs." These 16 drugs "of the most outstanding vegetable bases and their salts" were the roots of the pharmaceutical company now known as E. Merck AG.

In 1814 Johann Daniel Riedel, a pharmacist, began to manufacture medical and dental remedies, thereby initiating the Riedel de Haen Company. In 1851, Ernst Schering, also a pharmacist, founded the Schering Company. Similar histories apply to Willmar Schwabe Company, and W. Koelm Company.

A much larger section of the German pharmaceutical industry originated from the tremendous progress made in the biosynthesis of chemicals, based on the discoveries of Justus von Liebig (1803-1873) and his pupils Friedrich Wöhler (1800-1882), August Kekule (1829-1896) and August Wilhelm von Hofmann (1818-1892).

Pharmaceutical agents were often by-products of the chemical industry, especially of dye works such as Hoechst and Bayer.

A decisive influence on pharmaceutical progress was provided by the advances in the discovery of the causes of diseases made by Louis Pasteur (1822-1895), Robert Koch (1849-1910), and by Emil von Behring (1854-1917) who received the first Nobel prize in medicine.

The German pharmaceutical industry, which began humbly in small pharmacies, grew rapidly and continuously until World War I. The survival of the German pharmaceutical industry after the setbacks suffered during and after both wars and Hitler's regime resembles a miracle and was due to the solidity of foundation and resilience of structure. After the discovery of the sulfonamides by German industrial scientists, the pharmaceutical industry contributed 43 per cent of the total world sales of dental and medical remedies. *The Report of the British Medical Research Council* (1936-1937) included the following paragraph:

"The discovery and production of chemical compounds of value have depended almost entirely on German science and industry, and still depends. German firms have built up large organizations and have spent large sums of money to advance this aspect of therapeutics. In Germany,

where research in chemotherapy has been so successful, the investigations have been mainly made in the large research establishments maintained by the pharmaceutical industry. The German firms have employed hundreds of scientists and have achieved a result capable of the highest commercial development."

The progress of the German pharmaceutical industry is best demonstrated by comparison of the figures on total production and total export. In 1950, the total production had a value of DM. 536,000,000 (\$134,000,000) which value increased in 1959 to DM. 2,030,000,000 (\$505,700,000), whereas the total export in 1950 had a value of DM. 90,000,000 (\$22,500,000), which increased in 1959 to DM. 433,000,000 (\$103,250,000).

Most of the pharmaceutical products, manufactured in Germany, are now exported to the United States, Great Britain, France, Switzerland and The Netherlands, in that order.

Gerhardt, O. Bensburger Marktweg 35, Cologne-Dellbrück, Germany. Pharmaceutical industry in Germany. German M.Monthly 6:23-25 Jan. 1961

Shortage of dental technicians in England

Very soon, a serious shortage of skilled dental technicians will occur throughout England. The craft continues to lose good men to industry where the cash returns and working conditions are superior. Although the minimum rates of the craft are comparable to those in outside industry, the chance to work overtime, with double pay for Saturday and Sunday work, is not found generally in the craft. The more skilled the dental technician, the easier it is for him to find industrial employment with an over-all better cash return. One London hospital has lost two apprentices on completion of training, because they were able to take their skill in chrome-cobalt casting to the aircraft industry, and earn high wages immediately.

The trouble lies with the cost of dentures obtained under the Health Service. Professional dental laboratories continue their price war against each other. The British Dental Association seems to make no progress in negotiating an adequate price for dentures under the National

Health Service. Perhaps the Department of Health is content to sit back and watch a divided dental team cut their own throats. But what happens to the provision of dentures and dental treatment under the scheme when lack of technical personnel brings the supply of dentures practically to a standstill?

Up to now, the craft has not lost many persons through retirements and death, because most older technicians took advantage of the 1921 Act and became dentists. Those technicians who missed the Act because of age now are reaching retirement. Apprenticeships cannot fill the gaps that will occur.

We, as a union, have done our best to introduce a full-time training scheme, but most students presenting themselves at institutes are said to be poorly trained at the place of employment. The majority of apprentices are still employed to run errands and do so-called "hack work" in the laboratories, and receive inadequate instruction. Under these conditions the union could not allow any change in the ratio of apprentices to adult technicians.

There is enough enthusiasm in the profession to introduce the full-time training scheme, but funds to run the scheme and provide the students' expenses are not forthcoming.

Extreme shortage already has brought dilution to the profession of dental surgeon. If the shortage of skilled technicians is allowed to continue, the same paralysis could overtake the craft.

Editorial. 331 Gray's Inn Road, London W.C.1, England. Shortage [of dental technicians in England]. D.Technician 13:97 Nov. 1960

Artificial respiration

Emergency airway: four basic steps required to restore ventilation

Total airway obstruction is an emergency as critical as cardiac arrest or drowning. It demands immediate action and relief of the obstruction within three to five minutes after onset if the victim is to survive without brain damage. Recently, the Army Medical Service School has in-

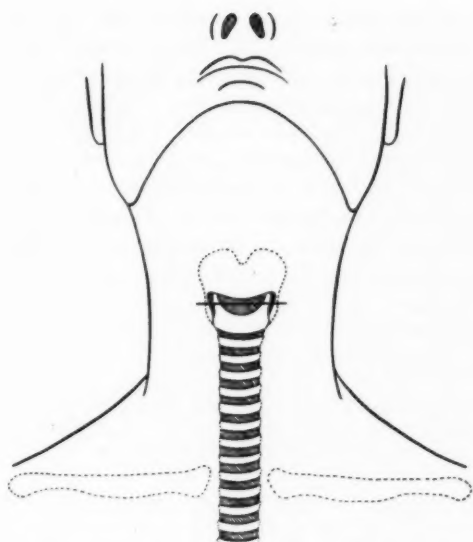


Figure 1 Cricothyroid membrane is located in subcutaneous position between thyroid and cricoid cartilages in about middle of neck. Larynx and trachea are shown in outline. Incision for cricothyroid puncture is indicated by solid transverse line

structed several thousand physicians, dentists, veterinarians, nurses and other medical specialists in the emergency management of obstructed airways. A step-by-step plan of action has evolved, as follows:

Step 1: Prompt recognition of critical airway obstruction. The following far-advanced signs require immediate effective treatment within one to three minutes: cyanosis (may be masked by pallor); noisy breathing (crowing, stridor); absence of breathing; straining of chest and neck muscles; unconsciousness, and little or no air flow detectable at mouth and nose.

Step 2: Nonsurgical maneuvers. Open the victim's mouth; remove fluid and foreign bodies from mouth and pharynx with fingers; extend the head and neck to prevent kinking of upper airway; push or pull the mandible forward to prevent obstruction of the pharynx by the tongue. If properly accomplished, these maneuvers will relieve many obstructions immediately and the victim will breathe spontaneously. If effective breathing does not begin promptly, proceed immediately to next step.

Step 3: Positive pressure artificial respiration. This can be administered either by performing mouth-to-mouth breathing with high inflation pressures or by using a mask-bag-oxygen unit or positive pressure resuscitator if immediately available and if the rescuer is familiar with its operation.

Inability to inflate the lungs, resistance to flow of the rescuer's breath into the victim, and failure of air to escape from the victim's lungs can be detected readily within two or three inflation efforts by the rescuer. Persistent severe obstruction thus is quickly and accurately diagnosed, and the rescuer should proceed to next step.

Step 4: Establishment of emergency surgical airway. This can be done by tracheostomy or cricothyroid membrane puncture.

Cricothyroid membrane puncture is the fastest, safest and simplest way to establish a surgical airway under adverse and critical conditions.

The cricothyroid membrane occupies the space between the inferior border of the thyroid carti-

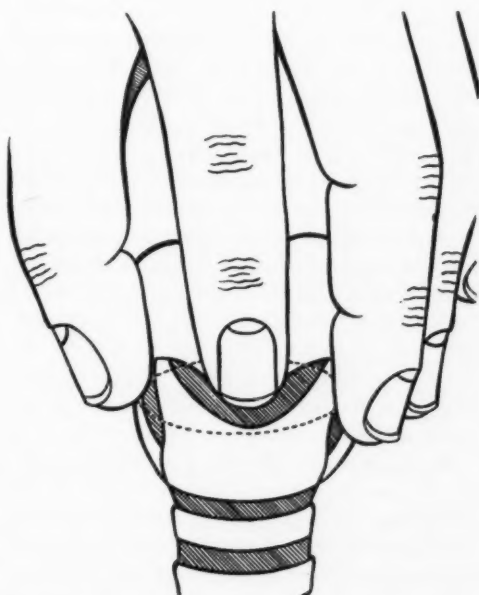


Figure 2 Larynx is stabilized between left thumb and middle finger. Tip of index finger in incision identifies cricothyroid membrane. To puncture membrane, sharp instrument is directed along nail of index finger and through membrane

lage and the superior border of the cricoid cartilage anteriorly (Fig. 1). It is immediately subcutaneous, being separated from the skin only by a few thin muscle fibers. The posterior wall of the larynx at this level consists of the heavy posterior projection of the cricoid cartilage; thus, even a rather violent plunge of a sharp instrument through the membrane is not likely to result in a posterior perforation of the airway.

The cricothyroid membrane can be identified quickly by finding the V-notch of the thyroid cartilage (Adam's apple), then slipping the finger down over the surface of the thyroid cartilage into the rather soft depression between the thyroid cartilage and the prominent anterior ring of the cricoid cartilage.

Cricothyroid membrane puncture can be done rapidly with almost any reasonably small, fairly sharp instrument. Sewing scissors or a dull jack-knife are satisfactory instruments. The operation is safe, even when performed by inexperienced hands, because the target is so superficial, the posterior projection of the cricoid cartilage prevents posterior airway perforation, and there are no significant blood vessels or nerves in the area.

To perform cricothyroid membrane puncture, first identify the target. Make a transverse incision about 1 inch long through the skin only, directly over the membrane. Incision with scissors or a dull knife is facilitated by pinching up the skin and snipping or sawing through. Stabilize the larynx between the left thumb and middle finger, and press the nail of the left index finger firmly into the cricothyroid membrane through the skin incision (Fig. 2). Pass the point of the instrument along the fingernail with the flat side parallel to the nail, and puncture the membrane. Open the airway by spreading the scissors blades or rotating the knife blade 90 degrees. A hiss of air and coughing usually will occur. The opening can be maintained temporarily with a pen barrel, a piece of stethoscope tubing, or even a couple of keys held in the opening. Bleeding is insignificant and easily controlled. With the airway open and under control, the patient can be removed to a hospital and a standard tracheostomy may then be done by qualified personnel under tranquil conditions.

In aftercare, the prime consideration is to assure that a free flow of air is maintained. This requires constant attendance. The airway tube

must be fixed firmly in place so that it can be neither expelled by movements or coughing nor aspirated into the airway. The tube must be kept clear of secretions by suction and by wiping expelled secretions from the end of the tube. Improvised suction devices can be made from hypodermic or bulb syringes, or, in desperate situations, a rescuer may remove secretions from a tube by direct oral suction. Positive pressure artificial respiration can be applied by mouth or machine to an airway tube.

This plan is believed to be effective, safe and simple.

Nicholas, Theodore H., and Rumer, George F. Army Medical Service School, Fort Sam Houston, Texas. Emergency airway—a plan of action. J.A.M.A. 174:1930-1935 Dec. 10, 1960

Practice administration

Shortage of dentists?

In the July 1960 issue of *North-West Dentistry*, the editor, Walter Hyde, asked readers for their opinions on the question of a present or potential shortage of dentists. Excerpts from 13 replies are presented:

"A serious shortage of dentists will be felt soon, with the great increase in the population. As you know, many [dentists] are taken by death and others are leaving practice for various reasons. At the present time, there are not enough new graduates to replace this loss."—L. E. Summers, Minneapolis.

"Having been in the practice of orthodontics for 13 years, it has been obvious to me for a long time that we must train more men. My conversations with many dentists have indicated that except where locations could be improved, everyone is working at full tilt. Our problem is not of today, but of the future. Obviously, turning out the same number of dentists each year while the population explosion is happening cannot provide sufficient numbers for the future. . . . Up to now we have had no real shortage, except perhaps in certain areas or in the specialties."—R. E. Baker, St. Paul.

"In this southeastern area of Minnesota, there is certainly no shortage of dentists. Each village of 700 to 2,000 population has two or more dentists. Also the population of agricultural areas is decreasing rather than increasing. I find that many older dentists, because of the increasing burden of taxation, diminishing value of insurance and money saved, and the climbing costs of living, are continuing practice for a longer period of years than formerly."—L. V. Peterson, Mabel, Minn.

"We have a surplus of dentists in Minnesota. I believe we are regressing as a profession because of this one factor. I know many dentists, young and old, who are not now working to full capacity. I know of no patients who cannot see a dentist within a reasonable time. All this encourages dental 'shoppers.'"—James Boily, Dodge Center, Minn.

"There is no shortage of dentists in our region at present. Just because a dentist may be unable to schedule a restorative procedure immediately does not exhibit proof of shortage. Time during this week or the next usually can be allotted for the procedure. The future should also bring no shortage because of increased production with improved equipment and adequate use of auxiliary personnel. Another additional aid in the future control of caries is the increased use of communal water fluoridation."—Stanley Galuszewski, Anoka, Minn.

"For the past several months I have had occasion to talk with practicing dentists from all over Minnesota and several other states. For the most part, they seem to be as busy as they want to be. They all express a desire to 'edit' their practices. . . . In no case did I detect an attitude of too much to do. I know dentists who do many thousands of dollars of welfare work every year. . . . I think this would not be true if an oversupply of private patients existed."—George MacGibbon, Minneapolis.

"I think that a shortage of dentists does not exist in the State of Minnesota or that there is likely to be one in the near future. With a large part of the rural area of the state showing a decline in population and the smaller towns showing only moderate gains, it seems this problem has been exaggerated. A large number of the members of my class of 1952 of the University of

Minnesota, as well as succeeding classes, have left the state simply because the opportunities for practice were better elsewhere."—David T. Lingle, Princeton, Minn.

"The opinions of dental educators and dental deans notwithstanding, there is no shortage of dentists. On the contrary, there is an inadequate distribution of dentists. All the public relations in the world will not bring in the 60 or 70 per cent of the population that does not want dentistry, even if offered free. (Broken appointments in free dental clinics are just as high as in private dental practice.) What is needed is better distribution of dentists and a higher caliber of dental school applicant."—Martin Rothman, New Haven, Conn.

"It is my considered opinion after 37 years of practice in Northeast Minneapolis . . . that there is no shortage of dentists today and that there is not likely to be a shortage in the near future. Within these 37 years, the only real dearth of dentists occurred during and for several years after World War II, from about 1941 to 1951. . . . In speaking of a shortage of dentists, we are likely to confuse the great need for dentistry with the actual demand."—Harry J. Lilienfeld, Minneapolis.

"There no doubt is a shortage [of dentists] in some other states, but not in Minnesota. There was a shortage following World War II, but that shortage no longer exists. There is a need for dental service but not enough demand to keep all dentists as busy as they should be. City income is up, but farm income is down to the point where the average farmer doesn't have the money for even the necessary dental care for his family."

2236 Marshall Avenue, St. Paul, Minn. Shortage of dentists? North-West Den. 39:403-407 Nov. 1960

The doctor's little black book

The dentist concerned about the possibility of having his office records destroyed by fire may wish to carry home with him each night a "little black book" listing the exact amount due him from each patient.

In a book, 6½ by 9 inches, is the name of each patient who has an unpaid fee. Each patient's name, address, last date of service or payment,

and the amount currently owed are listed, as follows:

Jane Doe PBP
195 Lane Dr.
TR. 1-1234
1/1/59 \$25
1/5/59 50
1/15/59 40

No other particulars need be listed, such as explanation of what type of work was done or how much the patient paid.

At the end of each month, the total amount listed in the loose-leaf notebook is added; the amount should be the same as the previous month's total, plus the current month's production taken from the day sheet, minus the collections for the month.

The little black book is of great value at the end of the month. The tedious, wasteful work of going through the files, removing the patient's record, typing the amount, putting the sheet back into its folder and refiling is avoided. It requires only a minute to type the name, address, and copy the last figure on the sheet, and turn the page for the next statement.

After the patient has completed payment for dental services, the sheet with his name and information is removed from the little black book and put into the patient's folder for later uses.

Use of a little black book results in peace of mind, quick reference and a savings in time.

Thomason, Mildred. 1133 Columbiana Road, Birmingham, Ala. The doctor's little black book. J. Alabama D.A. 44:4:15 Oct. 1960

History

Why should the young dentist study the history of dentistry?

There are several reasons for advising dental students and young dental practitioners to become interested in the study of history of the profession they have chosen. For instance, a patient may ask questions about the historical background of specific dental procedures, instruments or remedies. If the dentist is unable to answer accu-

rately, he will be embarrassed and the patient disappointed.

After I had practiced dentistry for several years, a patient asked: "When was the first dental drill invented and used?" I did not know the correct answer. Immediately, after the patient had left my office, I tried to find the answer in dental literature. I found it, and found so much more. I became immensely interested in the story of dentistry from the dawn of civilization to the present time, and continued studying this fascinating subject. As a matter of fact, I learned about anthropologic facts and theories, dentistry of the Egyptians, Chinese, Greeks, Etruscans, Romans and Hebrews. I studied the work of Abulcasis of Cordova, Pierre Fauchard and of other "fathers of dentistry." I found out interesting facts about the invention of porcelain teeth, gold foil, amalgam and cement, about the introduction of inlay technics, casting processes, etiology of dental caries and periodontal disease. All were facts I had not learned at school or I had forgotten. I found out about "magic" used by the ancient dentists and about the initiation of scientific thought in dentistry. Some most interesting facts cropped up, mysterious theories followed by occult treatment procedures. Studying the history of dentistry presented me with a special and unexpected dividend: the acquaintance with the authors who had contributed to the progress in dentistry from the ancient times to the present. Indeed, one wins many new friends by studying the works of the early dentists, physicians and surgeons.

Besides learning about the historical background of dental treatment procedures, one clearly recognizes the dentist's primary obligation: the fight against pain. This fight started several centuries before our era. We can find an early account of it in the writings of Hippocrates and his pupils. The fight against pain continued, and the results appeared in the dental, medical and surgical literature through the ages, and in a way ended with the victory won by two American dentists, Horace Wells and William Morton, who introduced total anesthesia in the middle of the nineteenth century.

The history of the struggle against human pain is more interesting than any mystery book, and it offers so much more to the young dentist.

During the last decades, the developments in the art and science of dentistry have been phenomenal; no less outstanding have been the advances made in dental education, dental organization and dental journalism.

Studying the history of dentistry will reveal to the young dentist that his profession grew by the contributions made by individual authors and researchers of all countries, and that no nation can claim a monopoly in the advancement of dentistry. He will admire his chosen profession which has reached an exceptionally high standard after many great difficulties. I am certain that he will be proud to belong to this profession.

Strömberg, Hedvig Lidforss. Lundsgasse 5, Copenhagen, Denmark. Why should the young dentist study the history of dentistry? *Zahnärztl.Mitt.* 48/50:858-860 Oct. 1, 1960

Dental anecdotes

Conelle, one of the most famous Italian court jesters of the fifteenth century, was employed by the marchese Nicola D'Este, the duke of Ferrara. The duke, who admired the intelligent buffoon's sometimes absurd, clownish and ridiculing remarks, asked Conelle: "Which craft has the most members in the city?" The jester immediately answered: "The dental profession." "This is ridiculous," said the duke, "there are only three dentists in Ferrara." The duke promised to pay 100 gold ducats if the jester could prove his statement. Conelle, on the next day, sat on the steps of the cathedral, his face completely covered with cloth. Many persons, attending the church service, asked "What ails you?" He answered: "I've a terrible toothache." Almost every person recommended an infallible remedy. Conelle recorded 300 names and addresses. At noontime, the duke passed by, and even he suggested a medicine which would bring immediate relief. Conelle added the duke's name to his long list. On the next day, he presented his dental directory to the duke, who found his own name on top. He smiled sourly but paid the 100 ducats.

Vansebben, a famous London dentist, met a dental charlatan, who sold his miracle drugs from his golden equipage to a multitude of people for enormous prices. "How come," the dentist

asked, "that you without any knowledge, experience and training in dentistry can do so well while I, a learned man, have to struggle to meet my obligations?" "That's easy," answered the charlatan. "More than 1,000 persons pass by at the house in which you practice your art every day without visiting your dental office. How many of them, do you think, have sound common sense?" "Maybe 20 or 30 persons, I assume." "These few are your patients, but mine the other 970 or 980."

In Vienna, Baron Rothschild's oldest son was born with cleft lip. Depuytren, an oral surgeon, was successful in repairing the cleft esthetically and functionally. The Baron, without waiting for a statement, sent the dentist 500 florins, but received neither thanks nor acknowledgement. A few weeks later, the Baron met the dentist at a coffeehouse. "I assume that you were surprised to receive such a fee so quickly," said the Baron. "I certainly was amazed that nowadays even the Baron Rothschild pays in installments," replied Depuytren.

Holthamp, Paul. Marienstrasse 115b, Minden/Westfalen, Germany. Dental anecdotes. *D.Dienst* 12:29 Sept. 1960

Miscellaneous

Half-life of half-truths

The faster modern scientific research progresses, the more satisfied must the researcher become with the discovery of half-truths.

In the healing arts, as well as in other sciences, the half-life of a given belief need not necessarily be proportioned to the credibility of the belief. The history of medicine or of dentistry, through their dark and enlightened ages, reveals that the periods of darkness outdistance the periods of discovery. Never has the axiom, "The greater the ignorance, the greater the dogmatism" been more applicable than in the history of the healing arts.

The most dogmatic half-truths tend to result from testimonial evidence, inductive philosophy, specious reasoning, uncontrolled observation, misleading reporting, premature conclusion, statistically invalid data, and the like. But these

meretricious sources of information are sometimes so intertwined with legitimate observations that even the most critical observer may have difficulty in separating the two. Half-truths, therefore, often survive a long time, although they mislead us and dilute our stock of information. But eventually they must die.

Half-truths, however, can be the building blocks on which a body of knowledge, a whole truth, can be constructed. As a rule, they consist of observations with tentative deductions, findings with acceptable control data, or comparisons which withstand critical statistical analysis. However, research is meaningless unless the results are made available to those who can use the new information. Therefore, a need has developed for a type of medical or dental writer who may be called a documentalist or literature scientist.

The documentalist's task is not appreciated by all physicians or dentists, and is maligned by some: "Stealing from one source is plagiarism; stealing from many sources is research." The responsibility of the documentalist is at least as great as that of the researcher because he may misdirect, misinterpret or misrepresent legitimate data. Collective reviews, therefore, should be written only by critical, experienced men. The decay of a bad half-truth would then tend to become more rapid than the decay of a good half-truth.

Three general trends are being observed in current medical or dental writing: (1) an increasing reliance on condensation; (2) an unfavorable speed in publication, and (3) a greater standardization in journal style and journal requirements.

Although each factor requires a degree of co-

operation from the author, the ultimate responsibility for the dissemination of scientific information rests with the editor. He has to see that the quality and clarity of articles or summaries of articles he publishes permit the reader to get information as easily and as efficiently as possible, and that editing preserves the author's work effectively.

It is an equally important responsibility of the editor to prevent the dissemination of half-truths which usually come from a person whose position seems to qualify him as an authority, but whose writing contains biased, unfounded or unsupported statements. Unfortunately, the half-life of such half-truths tends to be long, because of the reader's tendency to confuse authoritative position with authoritative statement.

The young man in research is faced with at least two conflicting philosophies; if he does not read enough, he runs the risk of not being well informed or of repeating (confirming) someone else's work; if he reads too much, he risks confusion and discouragement. So often, in the scramble to publish and, perhaps under the cloak of an apology for brevity, an author neglects to point out that his article is nothing but an expression of a half-truth published many years ago.

How many dental or medical researchers can lay claim to the discovery of a whole truth? How many can even claim to have contributed a part of a good half-truth?

Indeed, how many authors, editors and readers are able to recognize the difference between truth, good and bad half-truths?

Laufman, Harold. Northwestern University Medical School, Chicago 11, Ill. Half-life of half-truths. *Chicago Med.* 63:23-25 Jan. 1961

dental patents

Following are recent patents relating to dentistry granted by the U.S. Patent Office:

April 5, 1960

187,591 Jack Diener
Combined gum massager and interdental stimulator
187,615 John A. Salvia
Medical lamp and supporting arm unit

April 12, 1960

2,932,044 Louis J. Woodrow
Discardable dentifrice applicator
187,645 Taichi Yamanaka
Dental unit

April 19, 1960

2,932,835 James C. Everett
Triple action toothbrush
2,932,894 Joseph A. Sheldon
Dental instrument for ligating, placing and removing pins, adjusting, and so forth

April 26, 1960

2,933,811 Herman M. Lifton
Dental bite tray

May 3, 1960

2,934,776 George S. Clemens
Toothbrush
2,934,823 William J. Preis
Denture and method of making same

May 10, 1960

2,935,755 Alberto Ramon Leira and Vitalicia Hortensia Sanin Cabo
Toothbrushes and the like
2,935,791 Wiley J. Adams
Dental prosthetic device
2,936,006 James D. Henley
Tooth paste dispenser
187,864 Walter Dorwin Teague, Jr.
Dental chair

May 17, 1960

2,936,490 Harold J. Mason
Process of bonding cast metal and plastic
2,936,523 Harold C. Tift and others
Denture connecting device
2,937,099 Austin H. Kutscher
Dental preparation

May 24, 1960

2,937,444 George R. Kern
Fluid drive dental handpiece and system
2,937,443 Clawson N. Skinner
Physiologic denture adapter apparatus
2,937,445 Norman R. Erickson
Dental appliance
2,937,446 Arthur Weisenfeld
Dental tool and masses held therein
2,937,731 Richard E. Smith
Self-tightening dental over-running clutch transmission
2,937,790 James M. Lapeyre
Toothpaste dispensers
2,937,910 Sam J. Randa
Sanitary toothbrush holder

June 7, 1960

2,939,164 Murray W. Rosenthal assignor to Pycop Inc.
Antiseptic toothbrushes

dissertations

Changes in free-way space as a result of certain orthodontic tooth movements. *Shigeru Kawanami*. 1960. M.S. University of Kansas City.

Preliminary macroscopic observation on the influence of the supra-alveolar fibers on tooth rotation and retention. *Edward J. Miyahara*. 1960. M.S. University of Kansas City.

The incidence of certain oral lesions in the population of a veterans administration domiciliary. *Richard C. Porch*. 1960. M.S. University of Kansas City.

The incidence and findings of dentinogenesis imperfecta in isolated cases and in association with osteogenesis imperfecta. *William F. Runyon*. 1960. M.S. University of Kansas City.

An investigation of American Scandinavian cephalographs. *Arnold F. Sarya*. 1960. M.S. University of Kansas City.

The effect of an osteogenetic extract substance on the healing of extraction wounds. *William C. Schulte*. 1960. M.S. University of Kansas City.

A mean determination for the X-Y axis for Angle's Class II Division 1 malocclusion. *Norman E. Tillman*. 1960. M.S. University of Kansas City.

Oral histopathological changes in the hamster produced by a controlled orthodontic force. *William P. Wyatt*. 1960. M.S. University of Kansas City.

A study of anterior torque utilizing the typodont. *David W. Zemke*. 1960. M.S. University of Kansas City.

A study of the change of relationship of points A and B during orthodontic treatment with the multiphase appliance. *Jack B. Austermann*. 1961. M.S. University of Kansas City.

Infrared spectral characteristics of saliva collected from children classified as to caries experience. *Robert E. Bertoldi*. 1961. M.S. University of Kansas City.

A clinical study of an orthodontic torquing mechanism. *G. Franklin Forney, Jr.* 1961. M.S. University of Kansas City.

The acidity of zinc phosphate cement. *George H. Horne*. 1961. M.S. University of Kansas City.

Epithelial activity in the exfoliation of the deciduous tooth and the emerging permanent tooth. *Howard W. Johnson*. 1961. M.S. University of Kansas City.

Enamel surface change caused by oxyphosphate cement. *Robert W. Seniff*. 1961. M.S. University of Kansas City.

A clinical evaluation of toothbrushing for orthodontic patients. *Vaughn C. Sinclair*. 1961. M.S. University of Kansas City.

An investigation of cementation of simulated orthodontic brackets to extracted human teeth with rapid curing epoxy resins. *James H. Smith, Jr.* 1961. M.S. University of Kansas City.

The relative form of the palate in Class I and Class II malocclusions. *Arlen E. Staab*. 1961. M.S. University of Kansas City.

The effect of rotated teeth on dental arch length. *Harry R. Ulman*. 1961. M.S. University of Kansas City.

The relationship of lactobacilli to the presence or absence of teeth and carious lesions. *Patricia Anne Parsons*. 1960. M.S. University of Michigan.

Dental prosthesis in relation to chronic disease and disability. *Ahmed Abdel Mageed Idris*. 1960. M.S. New York University.

Cleft palate. *Kenneth I. Adisman*. 1960. M.S. *New York University*.

Infections of dental origin: their etiology, pathogenizing factors, and importance of anatomic relations. *David N. Berman*. 1960. M.S. *New York University*.

A study of the exfoliative cytology of the hard palate and buccal mucosa following cessation of smoking in previous smokers. *George Jay Wrubel*. 1960. M.S. *New York University*.

The influence of muscle function on the growth of the rat skull. *William James Moore*. 1959. PH.D. *University of Birmingham, England*.

The use of temperature measurement upon the labial gingiva of rabbits' incisors as an index of blood flow. *Roger Michael Browne*. 1960. PH.D. *University of Birmingham, England*.

Morphological changes in the denture-bearing area following the extraction of maxillary teeth. *David M. Watt*. 1960. PH.D. *University of Edinburgh*.

A laboratory and clinical investigation into resilient denture base materials. *Roy Storer*. 1960. M.S. *Liverpool University*.

Diagnostic and therapeutic investigations of selected lesions of the oral mucosa. *B. E. D. Cooke*. 1959. M.D.S. *University of London*.

An investigation into the changes that take place in the form and relationship of the dental arches during the first three and a half years of life, and the part played in these changes by environmental factors. *B. C. Leighton*. 1960. M.D.S. *University of London*.

Roentgenographic examinations of hypercementosis of fixed denture abutment teeth in the lateral region of the lower jaw (Röntgenologische Untersuchungen über Hyperzementose an Pfeilerzähnen von fest mit dem Restgebiss verbundenen Prothesen im Seitenzahnbereich des Unterkiefers). *Erdmut Tschew*. 1960. DR.MED.DENT. *University of Mainz, Germany*.

Clinical investigation of the injectable enzyme preparation Holoferm, produced according to Gaschler, in instances of periodontal disease (Klinische Prüfung des injizierbaren Fermentpräparates Holoferm, nach Gaschler, bei Erkrankungen des Zahnbettes). *Hans Günther Köhler*. 1960. DR.MED.DENT. *University of Mainz, Germany*.

Histochemical demonstration of protein-bound sulfhydryl and disulfide groups and the relationship to keratinization of oral epithelium. *Norman Markussen*. 1960. M.S. *College of Medical Evangelists*.

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authors index

- Andrews, George 402
- Balogh, K. 411
 Berger, Ulrich 429
 Berggren, Helge 396
 Bergström, K. 396
 Berling, Claes 410
 Böhne, Ch. 390, 417
 Březinová, Vlasta 409
 Busfield, B. L., Jr. 424
- Caesar, Rudolf 425
 Casey, Gerard J. 401
 Chakravorti, B. P. 420
 Chambiras, Peter C. 423
 Chase, Wilson W. 412
 Cragg, J. 423
- Deamer, David W. 421
 Denby, G. C. 396
 Dent, S. L. 405
 de Rudder, B. 400
 Dowling, Harry F. 427
 Dummett, Clifton O. 415
- Ericsson, Y. 396
- Fellinger, Karl 434
 Fleming, Harry B. 400
 Frajola, Walter J. 421
 Fryer, Minot P. 407
- Georgiade, N. G. 418
 Gerhardt, O. 437
 Gissa, Adolf 428
- Hall, K. D. 405
 Hansen, Erick H. 404
 Hazlet, John W. 422
 Hermann, Henri 392
 Hilding, Björn 410
 Hollenback, George M. 410
 Holthamp, Paul 443
 Homann, C. 405
 Howe, Geoffrey L. 404
- Ivy, Robert H. 408
- Johnston, A. D. 434
- Kaufman, Myron 406
 Knox, P. R. 405
 Krasse, Bo 424
 Kroepsch, Robert H. 392
 Krogh, Harold W. 401
- Lampe, Isadore 421
 Laufman, Harold 443
 Lauterstein, Aubrey M. 397
 Letterer, Erich 425
 Lindblom, Gösta 420
 Ludwig, T. G. 396
 Lysell, L. 396
- Macksood, Albert J. 413
 Marshall, Richard B. 413
 Massler, Maury 397
 McConnell, Duncan 421
 Menning, Harry 414
 Meyer, Irving 387
 Middleton, William S. 426
 Mitchell, David F. 422
 Moskow, Bernard S. 429
- Nadler, Samuel C. 415
 Nagano, Toshiro 426
 Nicholas, Theodore H. 438
- North, W. C. 405
- Orban, Balint J. 430
- Potter, John F. 390
 Poyton, H. G. 404
- Rapp, Robert 421
 Rhoades, John E. 410
 Rosenthal, S. 399
 Rowberg, Raymond G. 436
 Rumer, George F. 438
- Schaffgotsch, Xaver Count 433
 Scott, David B. 425
 Shankwalker, Govind B. 422
 Sharp, George S. 412, 422
 Sharry, John J. 424
 Shazer, Shirley 422
 Smith, Roger F. 413
 Smith, S. G. 423
 Sprague, Charles C. 409
 Staegemann, Gerd 416
 Stephen, C. R. 405
 Stephens, K. F. 406
 Strömberg, Hedvig L. 442
 Struthers, W. H. 396
- Talbot, Nell Snow 393
 Thomason, Mildred 441
- Umiker, William 421
- Vogt, Arnold 425
- Wechsler, Henry 424
 Welander, Erik 396, 398
 Wentz, Frank M. 430
 Wilderman, Malbern N. 430
- Ziemnowicz-Glowacka, W. 397

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